# An Address
ON
# A RENEWED RESEARCH ON THE SUBJECT OF ACUTE OVERSTRAINING OF THE HEART.

*Delivered at the Opening of the Winter Session of the West London Post-Graduate College on Oct. 11th, 1909,*

BY PROFESSOR SCHOTT, M.D.,
NAUHEIM.

MY LORD DUKE, LADIES, AND GENTLEMEN,—Before proceeding to read you my paper on acute overstraining of the heart, allow me to express my sincere thanks to the distinguished faculty of the West London Post-Graduate Medical College for the great honour they have conferred upon me by their kind invitation to deliver this address this evening.

While in the first half of the last century the valvular affections of the heart, with their train of symptoms, received the almost exclusive attention of the medical world, the chronic diseases of the cardiac muscle, and above all its functional disturbances, became later on the subject of much closer investigation. The organic changes in the heart muscle were in many cases not difficult to determine, either macroscopically or more especially under the microscope, but it was otherwise in the case of those disturbances which we denote as purely functional. And it was here that—as must be familiar to everybody, especially in this country—the pioneer work of Peacock, and his observations on Cornish miners, acquainted us with the true character of cardiac overstraining. From that time forward this chapter of cardiac pathology has never ceased to command the sustained and watchful interest of the medical world. Furthermore, the great development of athletic sports which has taken place during the last two decades, especially here in England, has greatly increased the number of cases of cardiac overstraining which in consequence came under medical observation. These observations of Peacock were confirmed later on by the investigations of Myers, Clifford Allbutt, Da Costa, Johann Seitz, Münzinger, and others. Nevertheless, knowledge of the true facts concerning overstrain of the heart could only win its way very slowly, for many declared themselves to be definitely opposed to the new teaching, whilst others spoke with very great caution and made known to the world their manifold doubts on the question, as, for instance, von Schroetter, E. Seitz, and Strümpel. It was the investigations of Leyden and Fraentzel which once more gave a fresh impetus to the researches on this subject.

I myself have reported in the year 1890 at the Ninth Congress of Internal Medicine in Vienna[1] a series of experiments which I made in order to determine whether bodily overstraining could produce alterations in a healthy heart, and also to determine eventually the nature of such changes. For this purpose I selected young, robust individuals, from 14 to 32 years of age, whose previous state of health, as well as the physical examination to which I subjected them, showed them to be free from any anomaly of the heart whatever. I made two of them wrestle with one another, resisting or lifting each other, until a high degree of dyspnœa had been produced by the previously increased muscular straining. In a second series of experiments, in order to increase the dyspnœa and render the cardiac action still more difficult, I fitted a leather belt close under the costal arch of the subjects and made them wrestle while thus hampered. In both series of experiments I actually did find that, when such severe physical overstrain leads to dyspnœa, the heart undergoes a greater or lesser amount of dilatation. This I designated as acute cardiac dilatation, which, of course, is to be regarded as a temporarily abnormal, but not as a pathological, condition. This, as I mentioned at the time, is evidenced by the fact that in healthy, robust persons such an artificially produced cadiac dilatation can generally recede entirely within a very short time, often in one or two minutes. I must add that in my first experiment the cardiac dilatation was determined, not only by a colleague and with ordinary percussion of the absolute cardiac dulness, but also by myself, and according to the method of my brother, August Schott, consisting in the percussion of the total heart limits with lateral limitation. The experiments I made with this method on animals, as well as the investigations conducted by me later on in the Berlin Maison de Santé on the human cadaver, have shown the possibility of determining the anatomical limits of the heart by means of this kind of percussion.

When, subsequently, the heart and its movements were made evident to the eye by means of the Roentgen rays, I found all the observations I had made by percussion fully confirmed, not only by the determination of the heart limits on the barium platino-cyanide screen, but by Roentgen photographs as well. It is especially these that show the expansion of the left ventricle, and notably with a depressed diaphragm. In order to find the true measures I rendered the nipples visible by means of small pieces of thin sheet lead, while by fixing the body of the subject under examination with straps around the head and shoulders, also by very exact drawings of the outlines of the feet on the floor, I had taken care to place the man always accurately in the same position relative to the apparatus, before wrestling and after. I had marked the nipples exactly by making dots on gelatine strips, and using these as reference marks I could verify their being again in the same place at the second examination. Naturally, only such experiments were regarded as conclusive in which all these precautions were rigidly adhered to. It was also the purpose of the above-described experiments to show that by a succession of bodily over-exertions the clinical picture of chronic cardiac overstraining may be developed. For, as I mentioned at the time, chronic overstraining of the heart is to be regarded as the result of a repetition of excessive muscular efforts. In order to illustrate this point I also added to my article the description of a few cases, and I found my views to coincide with the observations of Peacock, Clifford Allbutt, Fraentzel, Leyden, and several others.

Not only my experimental researches, but also my statements concerning especially such cardiac anomalies as follow the indulgence in excessive athletic sports, soon found confirmation in the works of Mendelsohn, and more particularly in the enlargements of the heart found in bicyclists by Albu and in ski runners by Henschen. Indeed, it seemed for a while as if chronic cardiac overstraining, solely produced by the cumulative effect of repeated and abnormally strong muscular efforts, was to be incorporated as a picture *sui generis* of cardiac pathology. This, however, did not last long. The former objection was heard again, that no heart can undergo permanent dilatation or hypertrophy through severe muscular overstrain unless previously altered, either in structure or in function. In this connexion doubts were also entertained whether, in my experimental investigations on acute overstraining of the heart, the subjects of the experiments had been entirely normal. These doubts were especially accentuated by the orthodiagraphic examinations of Moritz, Aug. Hoffmann, and de la Camp. Not only do these experimenters claim to have found in the course of their investigations no cardiac changes at all, or at best very insignificant ones, but they even state that they observed cases where a diminution in size of the heart had actually occurred. About the same time, as we shall see further on, others confirmed, on the strength of their own researches, the occurrence of acute cardiac dilatation following acute overstrain in previously healthy individuals. Owing to material causes it was only in the year past that I was able to undertake further experiments on the subject which interests us here, and it is upon these, as well as upon other correlated experiences gained, that I wish to report here as briefly as possible. The first question to be considered is whether it is possible for a healthy heart muscle to hypertrophy from an excess of work.

If this question be answered in the affirmative, the question would also be answered whether an excess of work will cause a heart muscle to dilate, since nowadays there is hardly a divergence of opinion regarding the theory that dilatation is the primary, hypertrophy the secondary lesion. The old view of Fraentzel to the contrary may now be considered as controverted, while that of Thurn, Jürgensen, J.

[1] See the Transactions of the Ninth Congress for Internal Medicine in Vienna, 1890.

Bauer, and others is, with few exceptions, generally considered to be correct. It lies in the very nature of the case—and my brother was the first to call attention to the fact—that in such conditions we have only to deal with an accumulation of blood in the cardiac cavities—in other words, with a passive, congestive dilatation, as opposed to a dilatation by compensation. And now the fine experiments of Külbs on young dogs working a long time on the endless inclined plane have revealed that cardiac hypertrophy due to work does occur, without arterio-sclerosis, without kidney affections, even without increase in size of other parts of the muscular system. Külbs communicates the results of the post-mortem examination of the hearts of such dogs as follows: "Through physical work we can succeed in bringing about, in young dogs of the same litter, of the same sex, and approximately of the same weight, a fairly considerable increase of weight of the heart, both absolute and relative. The proportion of heart to bodily weight changes in this sense, that the working dog acquires a cardiac weight approaching that of the roe-deer, whereas the dog kept for verification and comparison of results showed the proportional weights to be those of the ox."

It is thus physiologically established that simple performance of labour can lead to hypertrophy of the heart. But in men also it has been proved beyond a doubt that there is such a thing as pure, simple cardiac hypertrophy. The exaggerated pursuit of athletic sport, which during the last 20 years has been constantly on the increase, has confirmed all the observations reported in my first publication, and one may find a large number of communications concerning cases where it was simply the physical overstraining due to excessive indulgence in athletic sports that impaired the hitherto healthy heart and led to chronic cardiac overstrain, even in youths who had not suffered from previous maladies nor indulged in the inordinate use of alcohol, tobacco, coffee or tea. This is shown in numerous examples, which can be found in the extensive literature we already have on this subject, in very exact clinical histories as well as in the increased size of the heart found by means of the most diverse methods of percussion, also with the Roentgen rays, including the orthodiagraphic process. I need only here make a passing reference to the fact that sudden strong emotion, fright, or shock, are liable to produce very injurious effects on the heart, and medical men have ample opportunity of observing how prolonged anxiety or mental overstrain often impair the muscles and nerves of the heart. Von Frey in his physiological work very correctly points out that one finds dilatation with cardiac hypertrophy as the result of continued physical overstrain in persons whose hearts had not been subjected to any other noxious influences And it is just exactly to this fact that I should like to call especial attention. All the former allegations regarding chronic cardiac overstrain having thus been confirmed, the only question requiring further consideration is, whether severe bodily overstrain is capable of exercising a direct effect upon the heart—in other words, whether abnormally severe muscular strain can bring about acute cardiac dilatation.

First of all, I should here like to meet the objection that my cases were persons whose hearts were abnormal, debilitated, or suffering from functional alterations. I experimented on 14 robust youths and young men, from 14 to 34 years of age, and with many of them I frequently repeated the experiments. I have kept most of them under supervision for many years, and to the present day their hearts have remained healthy without exception. As before mentioned, Mendelsohn, Albu, Henschen, and many others have recently confirmed the facts which I had established by percussion. Once more I must premise that the results I had obtained with percussion were corroborated by my radiograms in 1897. Not only did I find a cardiac dilatation, but also a change of form of the heart, which was oval *before* the experiments, whereas *after* the wrestling the dilated heart had acquired a more circular form, this with the diaphragm forced downwards. The left cardiac half, which did not reach the nipple line before, extended beyond it *after* the overstrain. The change of form as such is a fact. There might at most be a difference in the elongation of the transverse diameter due to shadow projection, but this cannot be of consequence, since by proper selection of the time of exposure, the person under examination being in the same position, the heart lies close to the anterior thoracic wall, so that really only the thickness of the chest wall would have to be considered. And now the question arose whether, and to what extent, orthodiagraphic examinations give us better results.

It is not to be doubted that the discovery of orthodiagraphy by Moritz means a progress in the examination and observation of the interior of the body, this being especially the case where it is a question of determining the size of organs at rest or of foreign bodies within the organism. But it is a different matter when it comes to the determination of the size of organs in motion, of which one wishes to make comparative observations at different times. Not only does this apply to the heart but to other organs as well, such, for instance, as the stomach or the intestines while in motion, &c. For we should not forget that every orthodiagram we obtain is the orthogonal, therefore the vertical projection of the greatest extension in one plane. This plane is invariably the same in the resting immoveable body, and therefore in this way we always obtain the same exact size of this body. It is quite different, however, with organs whose position changes more or less like the beating heart. And we shall see that it is exactly these movements of the heart that have to be considered in our experiments. In his extensive work on the subject Guttmann has already pointed out that with orthodiagraphy rotation of the body or changed position of the individual could in repeated delineations or drawings of the cardiac boundaries in different planes lead to differences of from 1 to 2 centimetres and more. Excepting a paper read by Hoffmann in a former congress, I nowhere find any indication that in the experiments made on men or animals the same attitude and position had actually been maintained during the orthodiagraphic examinations made at different times. This repeated use of the same canvas frame does not of itself offer any guarantee of an identity of position. Attempts have been made of late to obtain photographs of the heart with the shortest possible exposure, even in a fraction of a second, and also with the kinematograph. Apart from the fact that the resulting pictures are often wanting in clearness we never know positively in which phase of the heart cycle such photographs were made.

Quite recently, in the course of my work at Nauheim, the two following cases, amongst others, have come under my notice which exactly illustrate my theme. The first case is that of a medical colleague, aged 38 years, whose roentgenogram had been taken by medical men experienced in taking orthodiagrams, and these skiagrams had shown an enlarged heart. The dilated stomach had displaced the heart outwards and upwards. As soon as normal conditions of the digestion were restored the size of the heart was found by percussion to be normal and there remained, without any other abnormality whatsoever, only a simple neurosis of the heart which suitable treatment by means of baths, exercises with resistance and massage, speedily improved. The second case is that of a Russian lady, aged 44 years, who has for several years had myocarditis on a basis of diabetes, with the heart dilated to the right and to the left. Both the mitral and the aortic valves had systolic murmurs. In addition there were pronounced symptoms of angina pectoris; yet in spite of all this the orthodiagram taken in Berlin, as also the electrocardiogram showed absolutely normal conditions.

I have already on former occasions called attention to the fact that in order to avoid errors it was necessary to resort to the use of exact marks on the persons to be examined, and in certain cases to fixations that do not interfere with the respiration. It is exactly this which is shown in the heart silhouettes in de la Camp's work, and which were made according to the rules laid down by Moritz. Not only does, as de la Camp states, a changed location of the diaphragm and increased thoracic circumference after wrestling take place, nay, the subject under examination, after the experiment, has actually taken an entirely different position relative to the apparatus. This is clearly evident from the fact that the position of both nipples, relative to a hypothetical horizontal plane, is different before and after the wrestling, this difference allowing a fourfold decrease in size of the heart silhouette amounting to 1½ centimetres. In other words, the second results were obtained in an entirely different plane from the first ones, and therefore, even for this reason, they are not to be considered as conclusive. The drawings published by Aug. Hoffmann cannot be accurately judged of, since neither the right nipple nor the

location of the diaphragm is depicted in them. After all that has been said, it is hardly necessary to maintain that in view of the possibilities of such great sources of error we are still far from being able to determine the superficies of the heart within one single square centimetre, or its contents in a quarter, a half, or in a whole cubic centimetre. But, as we shall see further on, the possibility of other sources of error will also have to be considered.

A number of further observations have been reported meanwhile by other authors, and these are likely to throw more light on the question of overstraining of the heart. According to the orthodiagraphic examinations by the three investigators mentioned, it appeared as if great interferences with the cardiac functions, changes which, in his experiments on dogs, de la Camp produced artificially in the cardiac valves as well as in the heart's muscular apparatus, had no immediate deleterious effect. And yet the observation of such changes in men should already lead to misgivings, for great dilatation follows acute valvular inflammation. To give a few examples. Beck in his work "Touring and the Heart" reports on 31 young men, in 28 of whom he had occasion to observe the immediate effect of mountain-climbing. We are, above all, interested in his statement that there had been no previous illnesses and that mountain-climbing, which simply produced palpitation and shortness of breath, was followed not only by cardiac symptoms but also immediate dilatation, which he was able to demonstrate by percussion, in one case even by radioscopy. He saw, just as I did, such dilatations disappear in a very short time, often after a few minutes, and he shares my opinion that it is only a matter of over-accumulation of blood within the heart cavities. Beck reports other cases in which the dilatation persisted for a longer time, though in the healthy heart never longer than until the following day. But he also saw cases where, solely through frequently repeated mountain climbing, in persons that otherwise had always enjoyed perfect health, the picture of myocarditis as well as that of mitral insufficiency developed itself. Staehelin, in his observations on Swiss recruits, also pointed out that mountain climbing may lead to acute dilatation of the heart in previously healthy young men, while Düms shows how, simply on account of the severer strain to which soldiers are subjected nowadays, the number of cardiac affections is on the increase in the armies of the different countries. Beyer attributes this evil to the ever-increasing indulgence in the sport of bicycling.

Two years ago Baldes, Heichelheim, and Metzger reported the observations they had made on a number of young men, otherwise in excellent health, after a march of 100 kilometres (60 miles) in one day. In a relatively large percentage of the examinations, by means of percussion of the absolute heart limits, they found dilatation. It is especially to this work that I shall have occasion to revert again. The number of observations on the influence of bicycling on the heart is especially large, and the deleterious effect of this sport is confirmed by nearly all of them. This is particularly evidenced in racing, where heart troubles have been observed in relatively large numbers, also in cases where no other injurious factor was present. But in opposition to these observations we again have others, in which, even after very strenuous physical labour, no enlargement of the heart could be demonstrated, whether by percussion or by radioscopy. I only refer here, among others, to the investigations of Pfeiffer, published a few months ago, which he conducted on men, partly after protracted marches, partly after bicycling tours. In this category also belong the observations of Schieffer, to which I shall shortly revert. But the objections are by no means exhausted herewith. Even diminution in size of the heart after overstrain was found by means of orthodiagraphic examinations, such, moreover, as could not possibly be attributed to changes of position of the diaphragm—for instance, the examination made on swimmers by Kienböck, Selig, and Beck, and which led to the risky theory that the heart was relieved by the increasing flow of blood to the abdomen.

This conflict of opinion grows in importance if we consider the following facts: Dr. Baldes, Dr. Heichelheim, and Dr. Metzger kindly allowed me to avail myself here of the results of their unpublished experiments. These gentlemen last year determined the heart limits on healthy persons, orthodiagraphically, before and again after a march of 100 kilometres in one day. Moreover, these orthodiagrams were made with the diaphragm in the same position, partly by an expert official of the United Electrotechnical Institute of Frankfort o/M., Aschaffenburg, and partly by Dr. Baldes, who for two years almost daily made radiograms with Rieder in Munich. And now, instead of the enlargement of the heart formerly made apparent by percussion, they found a reduction in size. The copies of their orthodiagrams, which you see here, show very changing pictures. Sometimes we notice an enlargement of the right cardiac half with a reduction in size of the left half, then again the reverse is the case. But most striking above all is the great difference of form in the heart before and after the march. Particularly instructive is the case of a man who had made a very quick run of several hundred metres and had been orthodiagraphed while labouring with dyspnœa. The enlargement of the right half of the heart amounts here to 1 centimetre. On the other hand, the left half not only shows you a transverse diameter reduced by 3 centimetres, but the totally changed and flattened form makes it evident that the orthodiagram of this heart was taken in an entirely different plane after the run than before. The difference in position of the nipples, relative to each other, in the pictures taken before and after the march, argues in favour of this.[2] Like those of Hoffmann, all these orthodiagrams were made while the person under examination was in the erect position.

Last year a paper was published by Dietlen and Moritz, according to which they also found smaller hearts after bicycling. This paper exactly proves that it is by no means sufficient to register the results of orthodiagraphic examinations; also that orthodiagraphy of the quickly beating heart is still far removed from constituting an unobjectionable method for the determination of its size. Disregarding the fact that in these examinations by Dietlen and Moritz it is not conclusively proved that the cardiac diameter obtained before and after bicycling represent identical cardiac planes, the cases described do not at all come under the head of genuine acute overstraining of the heart such as I produced in my experiments. As evidenced by the communications themselves of both named authors, their subjects of experiments did not have any albuminuria or apparent palpitation as found by other authors, neither did any dyspnœa develop itself during the entire trip. Judging from this, there may have been a straining involving a quicker pulse, also great fatigue, but a real overstrain was out of the question. And yet this is of capital importance.

Schieffer, who works in Moritz's clinic, did not, with orthodiagraphy, find any change in the heart whatever immediately after bicycling. Regarding the degree to which the straining was carried, whether or not to the extent of dyspnœa, he fails to impart any information. So that here also there is no agreement between the facts as found and the orthodiagraphic examinations already mentioned. Yet this ought to be the case, were it not that, so far as the beating heart is concerned, orthodiagraphy shares with other methods of examination the disadvantage of inherent sources of error.[3]

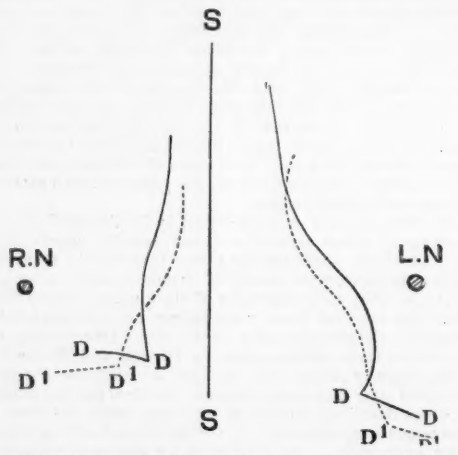
Last autumn, and before I had any knowledge of the investigations above mentioned, I began to verify orthodiagraphically the results of my former experiments on acute overstraining of the heart. Again I had the wrestling and resistance exercises performed by men in absolute health, of unobjectionable health record, whose hearts exhibited normal limits and normal functions. The dispositions were exactly the same as in my former investigations. Measurements and drawings were taken only after excessive dyspnœa, profuse perspiration, palpitation, &c., had manifested themselves. Examinations of the blood pressure and sphygmographic drawings were dispensed with, their results being sufficiently known. The radiograms were obtained in St. Mary's Hospital in Frankfort o/M., partly by the director of the hospital's Roentgen cabinet, Sanitätsrat Dr. Schmidt, partly by Mr. Dessauer, director of the United Electrotechnical Institute of Frankfort o/M., Aschaffenburg. They

[2] Dr. Baldes, whom I only saw in this connexion after these lines were written, remarked to me that he also had been struck by this change of mammillary positions, this being one of the reasons why the three above-named authors could not decide to publish their results, preferring to make further experiments.

[3] A few months ago Schieffer added two more publications to his former paper, also pertaining to this subject. The orthodiagrams, which are intended to show the influence of the different occupations and of military service on the size of the heart, were made exactly like those of Moritz and his pupils, as described above, thereby failing to offer any guarantee as to the reliability of the results obtained.

were made with Dessauer's trochoscope-orthodiagraph, it being claimed that this apparatus furnishes the most reliable results. I had made the wrestler's nipples apparent by pasting on them small pieces of thin sheet lead, and the middle thoracic line by a leaden wire fixed to the chest. The heart's limits were always determined during the condition of maximum diastole and lowest position of diaphragm by means of the well-known perforated screen. The dotting appliance was always exactly vertical over the anticathode of the tubes. In some instances the heart limits were traced directly on the man's thoracic integument, and in others on a horizontal drawing plane, adapted close to the thorax by

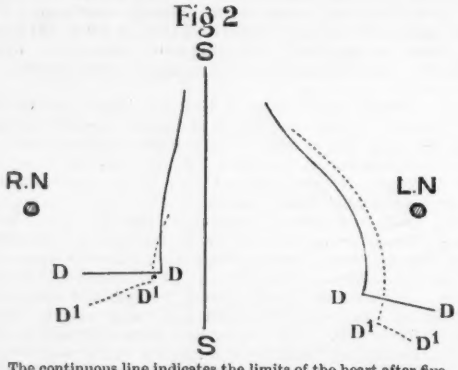
Fig 1




S designates the sternal line, R N and L N the right and left nipple, D and D¹ the location of the diaphragm. The continuous lines mark the cardiac outlines before, the dotted lines after, wrestling.

means of a holder. But even with such a perfected apparatus pictures are obtained that differ very much, this being due to several circumstances. It often, for instance, takes a long time before the person to be examined succeeds in reassuming accurately the same attitude in the horizontal position. Besides, it is very difficult for most people to lie quietly with great dyspnœa. Rotations of the entire body are especially apt to set in, which is, however, immediately made

Fig 2

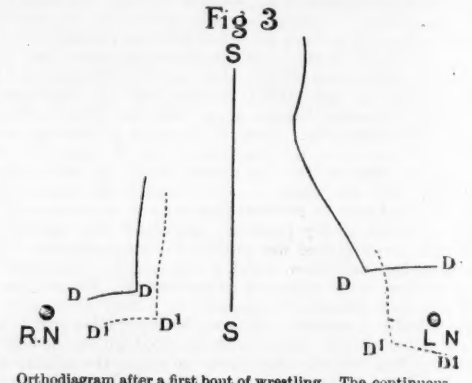



The continuous line indicates the limits of the heart after five minutes' wrestling, the dotted line after ten minutes.

manifest by the positions relative to each other of the marked nipples and sternal line. Or the heart, which in this position is strongly pressed upwards by the diaphragm, rotates considerably on its longitudinal axis. In addition to this, as I have shown in my first work on this subject, it happens that the lungs, being over-inflated through the dyspnœa, compress the heart more or less forcibly from both sides, diminishing its power of action, even displacing the greatest transverse diameter into another plane, unless the disappearance of this artificially produced pulmonary inflation be awaited.

All these elements have to be considered when we wish to obtain pictures susceptible of being mutually compared. I have kept accounts of all these points in my experiments and I now proceed to show you first two orthodiagrams taken by Director Dessauer. In the first one of these (Fig. 1) you see the heart exactly in a phase where, in stormy jerks, it is making powerful movements about its longitudinal axis. After about five minutes' wrestling the heart appears smaller in all its diameters. And in the second orthodiagram (Fig. 2)

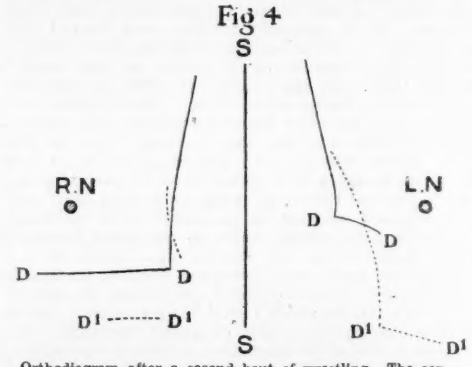
Fig 3




Orthodiagram after a first bout of wrestling. The continuous lines mark the cardiac outlines before, the dotted lines after, wrestling.

you see the same heart after five more minutes' wrestling. Although it took a relatively long time to obtain these second outlines, the heart with diaphragm depressed appears manifestly extended to the left. The subject under examination was an absolutely healthy cabinet maker, 34 years of age. The frequency of the pulse had increased from 68 to 116 per minute, respiration from 14 to 28. The orthodiagrams were made on the drawing plane. In most of the experiments I also took notice of the apex beat, except where this was hidden by the costal arch, and after the wrestling I noted an outward and downward displacement. And what I should like to lay especial stress on here is that, with a careful examination, it is by no means so difficult, as claimed, to palpate the left lower limit of the heart muscle in the vicinity of its apex. When the index finger is held perpendicularly

Fig 4




Orthodiagram after a second bout of wrestling. The continuous lines mark the cardiac outlines before the wrestling was resumed, the dotted lines after the end of the wrestling.

to the heart muscle and pressed deeply into the costal interstices, the heart's impact may be felt very plainly, and this motion of the heart as such may be clearly differentiated from the concussion of the thoracic wall.

And here we have two orthodiagrams made by Sanitätsrat Schmidt. They belong to a robust, healthy man of 32, who had never used alcohol, tobacco, &c., in excess. The orthodiagram made after the first wrestling (Fig. 3) shows, even

with deeply depressed diaphragm, the heart forced out of position and in such a manner that the right cardiac half appears to have become smaller, the left, on the other hand, enlarged. And now we take the same man after a few minutes' more wrestling (Fig. 4). Here, with strong dyspnœa, profuse perspiration, with an increase of pulsation from 70 to 123–125 and of respiration from 12–13 to 30–32, the picture is as follows: The right cardiac half, which was taken last, shows no change of transverse diameter with moderately depressed diaphragm; on the other hand, the left ventricle after 14 minutes of severe wrestling, naturally performed with several interruptions, has become enlarged 3 centimetres, this with a 5½ centimetre downward displacement of the diaphragm. Altogether a very considerable increase of the transverse diameter of the entire heart, as I have already described it in my first publication.

And now, before closing, I should like in a few words to revert to the question as to what might be the causes that led the several experimenters to such different results regarding the dimensions of the heart in cases of acute overstraining. First of all, we have to consider the circumstance that the determination of the cardiac dimensions may have been made under very different conditions. One investigator, for instance, may have examined during the period of pulmonary inflation; another one, perhaps, after the heart's dilatation had already diminished; while a third one may have determined the maximum cardiac extension while the heart muscle was in the state of greatest relaxation. Of course, it is evident that anyone who did not take part cannot render a reliable verdict on the correctness of the several results of percussion. True, the observations, as well as the nature of the experiments themselves, often differ so much that it is difficult to compare them with each other. To illustrate: Zuntz and Schumberg examined soldiers who had climbed high mountains, laden with accoutrements, until difficulty of breathing ensued, and found, while simultaneously testing the inferior pulmonary limits, dilatations in the transverse cardiac diameter amounting to 2 to 3 centimetres, which results Staehelin confirmed. How different the result in Altschul's cases, of which he himself was the first subject of experiment. Namely, after he had bicycled a considerable time on a bad road against a strong head wind I noted—and so did he—a marked cardiac dilatation. On the other hand, he himself, a trained tourist, hardly found any cardiac changes at all in himself or in other trained tourists after a long stretch of mountain climbing. To be sure, they were also not troubled with any particular difficulty of breathing. Again, we have the very opposite in the results arrived at by Beck, the men he experimented upon having scaled steep mountains until dyspnœa set in. And just compare Pfeiffer's results of his experiments on the effects of protracted marches with those of Baldes, Heichelheim, and Metzger, also those obtained on bicyclists by Pfeiffer with those of Albu.

The cause of the divergence between the experimental results can be traced without any great difficulty, for according to the physiological researches of later years the heart is constructed in such a manner as to represent the most perfect motor with which we are so far acquainted, so that it is capable of answering to the smallest stimulus with a maximum development of power. Moreover, it possesses the faculty to adapt itself to changed demands. Thus, for instance, the dog's heart is capable of taking in six times its normal quantity of blood and yet the left ventricle succeeds in overcoming this amount and contracting again completely. Certainly the heart's work increases enormously in overcoming such obstacles, and the increased intracardiac pressure must also be taken into account. But it is a well-known physiological fact that the dog, as far as the heart is concerned, can be subjected without detriment to considerably greater and longer hardships than the human organism, although fortunately the latter also possesses in its cardiac muscular apparatus and in its vascular system all kinds of temporary compensatory arrangements. And to these compensatory powers it is due, as I particularly stated in my first report, that the limits of over-expansion of the healthy heart may lie far apart in the muscularly strong individual. At the same time we see, nevertheless, that the qualities of the heart as a muscle manifest themselves, and to these also belong laxity and expansion as a consequence of excessive strains.

My Lord Duke, Ladies, and Gentlemen, I am firmly convinced that every physician, especially here in England, who has the opportunity to observe a considerable number of cases of heart affections will easily find confirmation of the fact that in individuals previously normal, and solely through the most different forms of overstraining, the heart may be brought first to acute dilatation, and finally through its repetition to permanent dilatation, with all its consequent phenomena.

# ON FUNCTIONAL DISORDERS OF THE COLON.*

BY ERNEST W. HEY GROVES, M.D., M.S. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE BRISTOL GENERAL HOSPITAL.

UNDER this heading it is proposed to describe all conditions of the colon which are associated with marked constipation without the occurrence of any gross disease. It includes, on the one hand, the extreme cases of idiopathic dilatation of the colon, most of which are congenital; and, on the other, those cases of chronic constipation which are probably due to a sluggish action of the large intestine. The necessity of considering such widely differing conditions together arises because of the existence of many intermediate groups of cases in which the colon is lengthened, dilated, and kinked and severe constipation exists, but it is impossible to determine whether the dilatation or constipation is the primary event. In other words, there are many cases in adults in which it is difficult to decide whether the colic hypertrophy is congenital or acquired, whether it is idiopathic or secondary, whether it is the cause or the result of chronic constipation. It is quite possible for well-marked dilatation of the colon to exist without causing any characteristic symptoms. For example, Baron[1] relates the case of a boy, nearly two years old, who died from scarlatinal nephritis and in whom a well-marked mega-colon was found at the necropsy which had given no symptoms during life.

The following case, which occurred recently at the General Hospital, illustrates the latency which sometimes characterises the disease. A labourer, aged 61 years, was admitted to hospital in March, 1909, suffering from cyanosis, shortness of breath, and œdema of the legs. He had had no previous illness. There was great distension of the abdomen, but no tenderness or dulness to percussion. He died suddenly within 24 hours of admission. Post mortem no disease was discovered except an enormous dilatation, with lengthening of the colon. The following were the chief measurements:—

| Part. | Length. | Normal. | Circumference. | Normal. |
|---|---|---|---|---|
| Cæcum ... | 3 inches ..... | 2½ inches ..... | 15 inches ..... | 11 inches |
| Ascending colon | 13½ ,, | 4 ,, ..... | — ..... | — |
| Transverse colon | 28½ ,, ..... | 20 ,, ..... | — ..... | — |
| Descending colon | 14 ,, ..... | 6 ,, ..... | — ..... | — |
| Sigmoid ... | 33½ ,, ..... | 24 ,, ..... | 15½ inches ..... | 7 inches |

Total length, 92½ inches; normal, 56½ inches.

The ascending and sigmoid portions of the colon were most markedly kinked, the sharpest angulation occurring 11 inches from the rectum. But there was no evidence of acute obstruction nor of peritonitis.

It may be possible, therefore, that a dilated colon exists as a congenital defect, but gives rise to no symptoms until adult life. It is well known, on the other hand, that any mechanical obstruction to the bowel will cause the intestine above to be affected in exactly the same way as is found in the congenital disease. Any adult case may, therefore, be one of congenital or acquired disease, but it is seldom possible to be sure which.

*Historical.*—The existence of extreme dilatation of the colon without any actual stenosis or obstruction has been described by a few authors many years ago. Billard,[2] in the early part of the nineteenth century, described a necropsy on a child 6 days old, in whom the whole of the colon was hypertrophied and sclerosed. Ammon[3] in 1822 related the

* The superior figures throughout this article refer to the bibliography printed at the end.

case of a child who died soon after birth in whom the colon and rectum were dilated. Oulment[4] (1843) and Favalli[5] (1846) and Banks[6] (1846) described cases which rather resembled those of chronic constipation with secondary distension of the large bowel. Gay[7] (1854) published an account of a boy, aged 3 years, who died from typhus fever, and in whom the whole large intestine was greatly distended, as he thought by paralysis. Instances of the more typical form of congenital dilatation of the colon were described by Henoch[8] (1861) in a boy two years old; Jakobi[9] (1869), Barth[10] (1870), Peacock[11] (1872), Gee[12] (1884), Bristowe[13] and Morris[14] (1885). In 1886 after Fütterer, Middledorpf,[15] and Gaum[16] had described isolated cases, Hirschsprung[17] collected all these previously published facts, together with his own observations, and gave an account of the general features of the disease. Hence it is known in Germany as "Hirschsprung's Krankheit," but it is evident that the facts do not justify this personal nomenclature, and it is better, therefore, to give it the descriptive name of "idiopathic dilatation of the colon." In its well-marked congenital variety it is a very rare disease, but if all cases of dilatation of the colon with severe constipation but without any mechanical obstruction be included, then it is possible to collect from the literature about 150 cases, and upon an examination of these the following account is based.

*Pathological anatomy.*—The whole colon alone may be distended, or more frequently only special sections are affected, the pelvic colon having the most marked tendency in this direction. In 93 cases where this point is specially mentioned the distribution of the dilatation is as follows:—

| | | | |
|---|---|---|---|
| Pelvic (or sigmoid) flexure alone ... ... ... ... ... ... | 31 | The whole colon ... ... ... ... | 13 |
| Several sections of the colon, the pelvic often being one ... | 39 | Colon and rectum ... ... ... | 6 |
| | | Colon and part of the small intestine ... ... ... ... ... | 4 |

The degree of dilatation varies within very wide limits in different cases, and in the same case at different times. When the abdomen is opened the distended viscus is often described as resembling the stomach, or as being as thick as a man's thigh. It is frequently 18 centimetres in diameter, and between 50 and 60 centimetres in circumference in adult cases, and in infants it may reach 35 centimetres round. In several of the recorded cases the size of the distended coils varied very much under different conditions. In one of my cases the colon, which was so large as to obscure all the rest of the intestines at the time of the first operation of colostomy, was only of normal size when it was excised. Hawkins[19] describes a case of an infant 3 weeks old who died after an exploratory laparotomy, the whole colon down to the splenic flexure being so dilated as to cause a visible tumour through the parietes, and yet after death this part had resumed its normal appearance. This point will be referred to again in discussing the question of "phantom tumours" caused by colic dilatation. In most cases the length of the colon is increased as well as its diameter, but this does not always occur. In the two following lists, taken from Löwenstein's article,[18] these facts are illustrated:—

*Cases illustrating the abnormal length of the colon.*

| Author. | Age. | Length. | Greatest circumference. |
|---|---|---|---|
| Tittel[20] ..... | 1½ years | 107 centimetres | 21·3 centimetres. |
| Berghinz[41] ... | 1½ ,, | 98 ,, | 14 ,, |
| Fenwick[42] ... | 1½ ,, | 101 ,, | 20 ,, |
| Concetti[43] ... | 2½ ,, | 102 ,, | 22 ,, |
| Barth[10] ..... | 10½ ,, | 140 ,, | 45 ,, |

*Cases of great dilatation with no increase in length of colon.*

| Author. | Age. | Length. |
|---|---|---|
| Bernheim Karrer[44] ..... | 1 year | 83 centimetres. |
| Gourevitch[45] ..... | 1½ years | 73 ,, |
| Graanboom[46] ..... | 4 months | 67 ,, |
| Baron[1] ..... | 2 ,, | 62 ,, |
| Bjorksten[47] ..... | 3½ ,, | 57 ,, |
| Pfisterer[48] ..... | 5 weeks | 45 ,, |
| Bing[49] ..... | 5 ,, | 42 ,, |

In comparing the ages in these two lists, it will be noted that cases where there is no increase in length are generally very young children, which suggests that dilatation is the primary condition, and the increase in length comes on later as a part of the general hypertrophy. The capacity of the colon is greatly increased and in many cases it seems to be only limited by that of the abdomen. In most cases this may be indicated during life by the large quantity of fluid which can be injected per anum, but this test is open to two fallacies, one to the fact that a kinking of the gut may prevent the fluid from filling the colon, and the other to the rapid absorption of the fluid as it runs in. The following figures relate to the amount of fluid that could be poured into the colon post mortem:—

| Author. | Age of patient. | Capacity. |
|---|---|---|
| Concetti[43] ..... | 2½ years ..... | 4 litres. |
| Le Roy des Barres[50] ..... | "child" ..... | 5 ,, |
| Barth[10] ..... | 10½ years ..... | 6 ,, |
| Futterer[15] ..... | 14 ,, ..... | 8 ,, |
| Peacock[11] ..... | 28 ,, ..... | 16 ,, |

The enlarged, and often lengthened, coils of colon become necessarily kinked and twisted in order to accommodate themselves to the cavity of the abdomen. This is most notably the case with the transverse and pelvic portions. The former is dragged down by the weight of its contents so as to form a long dependent loop hanging into the pelvis. The latter assumes the horse-shoe or ∩ shape, which is so characteristic of volvulus, and, indeed, as is mentioned later, it not infrequently is the preliminary stage of sigmoid volvulus. The normal flexures become exaggerated, the first part of the transverse colon with the hepatic flexure presenting a complicated folding like the letter W, and the two limbs of the splenic flexure lying in contact with each other for several inches. And lastly, there is in nearly all cases involving the pelvic colon a well-marked sharp kink at the beginning of the rectum. So much is this the case that Hawkins[19] remarks that it is often possible to wash out the gut through a rigid rectal tube when a flexible one will not pass into the pelvic colon.

The outward appearance of the bowel is normal as a rule, but white or œdematous patches occur on its surface sometimes. In children the lymph glands are often increased in size and number. The wall of the colon is usually thickened (6 millimetres) and this hypertrophy, whilst affecting chiefly the circular muscle layer, also involves the mucous membrane and submucous tissues. The tænia are present as broad bands 3 or 4 centimetres wide, and in some cases the longitudinal fibres exist as a continuous coat round the bowel. This thickening of the muscular coats is rightly insisted on by many authors (cf. Hawkins) as a clear evidence of the effort made by the bowel to empty itself of its contents, and is comparable to the hypertrophy of hollow muscular viscera—e.g., the heart or bladder—which often accompanies dilatation. In some cases (Treves,[54] Dodd,[28] Hawkins,[19] Case 9) one or more segments of the bowel are remarkably contracted, and when the contracted portion lies distal to the dilated it is probable that the former condition may be the cause of the latter.

According to the majority of authors inflammatory changes are comparatively rare, at any rate in their grosser forms of external adhesions or internal ulceration. The mucous membrane is often infiltrated by leucocytes and its connective tissue much increased. Ulceration which is secondary to fæcal impaction is sometimes found, and is to be inferred in those cases where much blood-stained diarrhœa occurs during life.

According to Löwenstein,[18] the blood-vessels—especially he arteries—are thickened and their lumen partly obliterated. Unfortunately the condition of the nerves is seldom mentioned, but in Gee's case[12] they were remarkably hypertrophied, and Geddes[74] has recently described an identical condition. In extreme degrees of the disease and in chronic cases the pressure of the dilated colon produces obstruction to the venous circulation, with resulting œdema and an enlargement of the collateral circulation. From the same cause the urine may be scanty and albuminous, or there may be pain in the front of the thighs from pressure on the anterior crural nerves (Grey).[52] The diaphragm becomes pushed upward, and the thoracic viscera correspondingly compressed and displaced. The heart's apex is lifted to the third or fourth interspace and the bases of the lungs are collapsed. These extreme chest abnormalities are only found in children; probably they are incompatible with prolonged life.

*Physical signs.*—In well-marked cases of the disease the abdomen presents an extreme degree of distension, being globular or barrel-shaped, and in children the contrast

between the blown-out belly and the contracted chest and the sunken face is very striking. The girth of the abdomen is usually greatest above the umbilicus, being, e.g., in a case related by Fenwick,[42] 26 inches (65 centimetres) above and 24 inches (60 centimetres) below.

In young children the chest is very stunted in its growth and capacity, measuring often only 10 to 12 centimetres from the top of the sternum to the ensiform cartilage, and being only one-fifth or one-sixth of the distance between the ensiform cartilage and the pubes. The margin of the ribs is everted, the subcostal angle being widely opened out. The whole abdomen is tympanitic and the liver dulness is lessened as a rule, and in many cases it is comparatively flaccid and soft. Occasionally fæcal masses can be felt and even indented by pressure (Woolmer[53]), and this sign is more likely to occur in cases caused by chronic constipation in adults than in the congenital variety in children. When these hard fæcal masses do occur, they are very likely to give rise to an error in diagnosis. There is no ascitic fluid found in the abdomen, and this fact seems to weigh very strongly against the existence of inflammatory changes in the peritoneal cavity. The parietal wall is very thin and often covered by large veins. Through it can be seen the distended coils of intestine so clearly that the part affected by the dilatation can often be made out before the abdomen is opened. The most usual disposition of these loops of colon is in a vertical direction. The distended pelvic colon lies usually as a large ∩, the apex of which may touch the costal margin. When the ascending and transverse colon form visible loops they, too, are disposed in the long axis of the abdomen. Next to the pelvic colon the ascending colon seems most frequently to form a visible coil, and the descending colon is most rarely thus affected. From time to time the distended coils can be observed slowly to contract, and a sluggish peristaltic wave is often accompanied by audible borborygmi. On rectal examination very different conditions may be found. In a few cases the sphincter ani has been found tightly contracted (Treves,[54] Grey,[52] Wilms,[55] Hawkins[19]), but that this is not an essential feature of the case is shown by the majority not presenting it, and further, by cases in which it is patulous or paralysed (Kredel[56]). A painful fissure in ano is a common result of the excoriation produced by the passage of hardened fæces.

*Onset.*—The severity of the symptoms varies very much in different cases, and in the same case from time to time. Remaining latent generally for some time after birth, insidiously arising after the distension has become well-marked, and varying with treatment or diet, the symptoms of colic dilatation sooner or later become so severe as to cause death, either by pressure on the chest or by intestinal obstruction or perforation. The latent period is difficult to estimate, because when the condition arises in adults it is always in doubt whether there has been a long-standing or congenital dilatation of the colon, or whether this has arisen secondarily to the constipation. But that true and extreme cases can exist without symptoms is proved, not only by Baron's case of scarlatina, in which it was found at the necropsy, having given no symptoms during life, but also by the many cases in which, after the bowel had been mechanically emptied, the patients remained well for long periods (Brooks,[57] Fletcher and Robinson,[58] Grey,[52] Hawkins,[19] Case 5). But the great majority of even adult cases give a history of obstinate constipation which dates back to their childhood. Some writers (Hale White,[59] Hawkins,[19] Fenwick[42]) have laid stress on the condition never being found in the new-born, and have argued from this that there is no proof of its congenital origin. But in addition to the improbability of such a condition occurring within a few weeks or months of birth without the existence of any obstruction there are several instances recorded in which the child was born with a greatly distended abdomen which subsequently proved due to the dilated colon (Escherich,[60] Stirnimann,[61] Hobbs, and de Richmond[21]). In Escherich's case the newly born child had a girth of 77 centimetres, with a body length of 37 centimetres.

The first onset of symptoms, apart from mere constipation, may be in earliest infancy, occurring when the child is at the breast, in childhood, or in late adult life. Hawkins draws attention to the fact that most cases present themselves for treatment before 10 years of age, and that nearly all the adult cases are over 40, the incidence between these periods being very rare. As exceptions to this, however, may be mentioned a man of 28 (Woolmer[53]), a woman of 21 (Brooks[57]), and a woman of 36 (Groves).[75] In 91 cases collected by Löwenstein[18] the time of onset of symptoms was as follows: 55 "since birth," 13 in first year, 11 between 1 and 20, 9 later than 20, and 3 at 70 or over.

The sex incidence shows a very marked preponderance of males, and this is more marked in the infant than in the adult cases. The actual figures given by different authors indicate varying proportions, but all agree in the above statement. In 122 cases, 94 were males and 28 females (3·35 : 1). In infancy the proportion of males to females is 7 or 10 : 1; whilst in adult life it is 2 or 3 : 1.

*Symptoms.*—Obstinate constipation, loss of appetite, and emaciation are the chief features of the disease throughout its whole course. Usually the constipation is quite unmistakeable, the interval between the stools being over a week. In my case the patient would go for three weeks without an action, Grey's two or three weeks,[52] Johannessen's five weeks,[22] Roth's six weeks,[23] Rolleston and Haward's nine weeks,[24] and Gay's three months.[7] Usually the constipation is well marked before distension occurs, but in other cases the bowels act quite regularly. This is important, because if the possibility is not recognised the nature of the case may be quite overlooked. Just as it is very common to get distension of the bladder associated with incontinence, so, too, there may actually be diarrhœa in cases of fæcal stasis. It is not enough for there to be a regular evacuation of the bowels, but unless the quantity evacuated is equal to that received by the colon fæcal accumulation must take place. It is common for attacks of diarrhœa to alternate with constipation, and when this occurs the patient is often much relieved, and the distension diminishes, but the abdomen seldom resumes its normal proportions. The presence of blood and much mucus in the motions is rare, and when it occurs with diarrhœa it is of grave import, indicating ulceration of the intestine.

Emaciation very soon becomes pronounced in children, and is partly caused by the loss of appetite. In adults it is of great importance, because it indicates that the metabolism is being seriously disturbed. In this respect it would afford a valuable indication as to the necessity of treatment. As long as a case of constipation, however severe, remains well nourished, it will probably yield to drugs, enemata, and diet. But when progressive emaciation sets in, the patient has not long to live, unless some radical treatment is adopted. And with the faulty nutrition there is generally some affection of the nervous system. In infants drowsiness and convulsions are common, and the latter may be the cause of death. In Langmead's case[25] the child suffered from severe tetany. With older children the mental development may be greatly impaired (Grey[52]), and in adults various degrees of neurasthenia or melancholia are very common. If persistent diarrhœa takes the place of constipation the temperature rises, symptoms of peritonitis set in, with vomiting and convulsions, indicating the occurrence of a perforation. But with the exception of this possibility, vomiting is quite unusual and is never stercoraceous. In young children various lung complications, such as bronchitis or broncho-pneumonia, are common causes of death, being caused, no doubt, by the great pressure on the thoracic viscera.

One other sign, that of the phantom tumour, remains to be discussed. The term is applied to an abdominal swelling which disappears when the patient is anæsthetised. It was first described in this connexion by Fitz[26] in 1899, and by Richardson[27] in 1901. In both these cases the patients were women of the neurotic type, in whom a "phantom tumour" might be expected. At first the diagnosis was regarded as being purely that of neurosis when it was found that the swelling disappeared under an anæsthetic. But in both cases the patients developed a degree of dilated colon which required surgical treatment.

In one of my cases[75] the same phenomenon was observed some time after the patient had had an ileo-colostomy performed. She was a woman, 37 years of age, who undoubtedly wished to attract attention to herself, for she was in the habit of making her thermometer register an alarming temperature by placing it against the hot-water bottle. She complained of attacks of abdominal pain, and at these times a very large resonant mass rose up in the right loin and hypochondriac regions, in the position of the ascending colon. This always disappeared when the pain ceased, and for

several days together the abdomen would be perfectly natural. Then for two or three days the abdomen became distended, and at intervals the localised swelling would reappear. On one occasion, when it was well marked, she was anæsthetised, and it slowly subsided as she became unconscious. She left the hospital for several months, but she then again complained of severe pain and begged for some further operation. On this occasion when she was in the hospital there was noticed a wave of contraction slowly passing along the swelling, from below upwards and to the left. At the operation, however, the ascending and transverse colon, which was excised, presented nothing unnatural in size, length, or appearance; and in Hawkins's[19] fourth case, in a boy three weeks old, a coil of colon proximal to the splenic flexure, which was greatly distended during life and during an operation, appeared to be quite normal after death. The phenomenon probably indicates a profound disturbance of the neuro-muscular mechanism of the bowel.

*The fæces.*—Whilst the capacity of the colon is greatly increased it is not always filled with fæces, but is often distended by gas. In the chronic forms, and especially in adults, there may be a great accumulation of hard, solid material, so that as much as a kilogramme (2 pounds) can be washed away at a time. In some cases it is so hard that it has to be broken up in the rectum before it can be removed, and in Brooks's[57] case there was a mass of vegetable fibre in the pelvic colon weighing 20 ounces (560 grammes), which had to be removed through an incision in the gut. Usually the first fæces removed are slate-grey and very offensive, but in several instances (Hawkins[19]) it is noted that they were remarkably odourless. In the more acute conditions of obstruction which often precede surgical interference the contents of the bowel are quite fluid, and can be evacuated through a tube.

*Course of the disease.*—The condition is essentially a chronic one, and except in the case of young children the patients may live for months or years after wasting has set in. One case is related which died 6 weeks (Pfisterer[48]) and another 11 weeks (Hirschsprung[17]) after the onset of symptoms. At first purgatives afford relief, but soon they become inoperative; then enemata are tried and give a longer period of respite. In several instances after the bowel had been emptied by operative or mechanical means the patient has remained well for an indefinite period (Fletcher and Robinson,[58] Brooks,[57] Grey,[52] Hawkins[19]). The earlier the symptoms manifest themselves, the more rapid is the course of the case likely to be, and, indeed, in most of the adults a history of chronic constipation goes back as far as their memory. The actual cause of death may be some lung disease or convulsions in infants; perforation, peritonitis, or toxæmia in any case.

### *Etiology.*

The exact causes of this group of diseases will always remain in obscurity, because so many factors are involved and it is a matter of opinion in any given case as to the relative proportion of the different factors in bringing it about. At least seven different contributory causes have been recognised and it will be convenient to consider them severally.

1. *Obstruction*, in the sense of an actual blocking of the lumen of the gut, probably never occurs as a primary condition. When the bowel is examined post mortem there is usually no obstacle to the free passage of fluid throughout its lumen, and this is certainly the case after the colon has been removed. Occasionally, however, a hard mass of fæces becomes impacted in some part of the lumen (Brooks[57]), and when this is removed the symptoms of the disease may disappear. It is extremely probable that this obstruction by fæcal masses often occurs as a secondary cause when the condition is of long standing. Having regard to the fact that in normal conditions the fæces do not assume a solid consistency before the lower part of the transverse colon is reached, this is perhaps one reason why the lower part of the bowel is more often affected than the upper. A degree of kinking may be present which affords no obstacle to the passage of fluid contents, but when a hard solid mass has to negotiate the same passage—e.g., the splenic flexure, or the sharp angle between the pelvic colon and rectum—it may well be that a blocking occurs. This may not be an absolute obstruction, but it is well known that a partial or intermittent obstruction of a duct is the most potent cause of hypertrophy and dilatation of the hollow viscus behind it, as is seen so well in the case of obstruction of the ureter by a loose calculus, or of the urethra by a stricture.

2. *Increased length.*—There is no reasonable ground for supposing that the mere increase in the length of a healthy piece of bowel can cause any difficulty in the passage of its contents. The small gut, which is four times as long as the large, never is subject to the disability we are considering. But the large bowel is so tied down to the parietes that its undue elongation almost necessitates its taking the form of sharp turns and twists, and if the increased length has any share in the production of obstruction it can only be in this way. That this lengthening is not, however, a necessary condition is shown by the many well-marked cases already referred to in which the colon is of normal length. But several facts, on the other hand, seem to show that it must be regarded as a contributory cause in most cases. One of these is the sex incidence. It is known that the colon is longer naturally in the male than in the female. Although this greater length may not amount to very much yet it is chiefly distributed in those parts of the bowel, such as the pelvic colon, which are not laid down in exact lines against the parietes. And for the same reason, therefore, volvulus of the pelvic colon is much commoner in men than in women. There seems to be no other explanation of the greater prevalence of these two diseases in the male sex than the greater length of the bowel.

3. *Kinking.*—That the kinking of the various dilated loops upon one another must greatly embarrass the onward flow of the fæcal contents is the most natural explanation, and it is irresistibly suggested by the condition of the abdomen filled by huge coils which are doubled sharply upon themselves. It is a matter for simple experiment that if a length of bowel removed from the body be laid in a confused heap in a basin there is some difficulty in filling it with water. One coil fills, and at the point where it is doubled upon itself the next coil is held closed. But whilst this does not represent the physiological condition in which the bowel itself affords the propelling force, it shows the increased difficulty caused by a sharp turn in the gut. It is particularly in those segments of the bowel which lie proximal to the natural or exaggerated angles of the colon which become most affected by dilatation. Thus the pelvic colon has a sharp kink between itself and the rectum, the ascending and transverse colon end at the splenic flexure, and it very often happens that it is one or other of these sections of the bowel which alone is dilated. The descending and iliac colon, on the other hand, which form the straightest part of the large intestine, are the parts most rarely affected by this disease.

4. *Muscular insufficiency.*—As far as can be judged from the structure of the affected colon there is certainly no muscular weakness. Whilst the whole gut wall is much thickened, being often 6 millimetres—i.e., about three times as thick as usual—this hypertrophy affects chiefly the circular muscle. And that this hypertrophied muscles does contract vigorously during life is shown by the visible peristaltic contractions seen through the thin parietes, especially in children. It is probable, however, that when any segment of the bowel is dilated beyond a certain point, the muscle is so stretched that it becomes paralysed, for this is consistent with what is known of muscle physiology throughout the body. And judging from the analogy of other obstructed muscular viscera, the dilatation and hypertrophy are probably antagonistic to one another, and when the dilatation has overstepped a certain degree the hypertrophy is unable to keep pace with it. Further, it must be considered that with the increase of muscle there goes a certain degree of fibrosis, with an increase of cellular and connective tissue, which indicates a chronic degeneration of the muscle.

5. *Spasm.*—It is quite clear, however, that the muscular act which is necessary for the propulsion of the colic contents is not a simple contraction, but an orderly succession of such contractions by the circular muscle fibres coördinated with contractions of the longitudinal tænia. And at the time when the muscle is hypertrophying, to meet some difficulty caused by kinking or by constipation, if one particular section becomes stronger than another it may very easily actually hinder rather than help the fæcal stream. In several cases it has already been mentioned that the

sphincter ani has been tightly contracted, and, after all, the internal sphincter is only a specialised part of the circular muscle. In other cases (cf. especially Hawkins,[19] Dodd,[28] Treves [54]) there has been a tight spasm of a considerable segment of the colon below the dilated portion. This in the cases mentioned affected a part of the pelvic colon, and was no doubt a large factor in the cause of the general condition. It may well be that this occurs very often in a lesser degree which disappears post mortem.

6. *Disorderly nerve impulses.*—Inasmuch as the muscular contractions are controlled by the nervous system, what has been said in the last paragraph applies with equal force to any irregularity in the passage of nerve impulses. The only anatomical ground for regarding the nerves themselves as abnormal is found in Gee's and Geddes's cases,[12 74] where the nerve plexuses were hypertrophied. But the disorder is one of function rather than structure. If the facts of the physiology of the colon be considered it is evident that the nerve control of the colic movements is very complex. Not only is there the coördination of peristaltic with anti-peristaltic movements, but the different sections of the bowel are affected differently by nerve impulses. Whilst the greater part of the colon is under the control of the inferior mesenteric plexus, the lower portion—including the descending and pelvic portions—is made to contract by stimulation of the lower sacral nerve roots. This may serve to bring about that very spasm of a distal segment and dilatation of a proximal segment which we have seen does actually exist if there is any incoördination of the nerve impulses. In adults, at any rate, there is often noticed an association between conditions of neurasthenia and colic dilatation, which may be explained on this hypothesis.

7. *Constipation.*—How far constipation is the cause, and how far it is the result, of dilatation of the colon is a most debateable point in the etiology of this condition. But inasmuch as constipation is merely a negative condition resulting from an altered activity of the bowel, an altered consistency of the fæces, or a voluntary resistance of the desire for defæcation, it seems unreasonable to regard it as the prime cause of the condition of the bowel, since it itself must be secondary to one of the above-mentioned conditions. The fæcal material is an inert passive matter in the grasp of an active vital tube, and, therefore, any stagnation of fæces must primarily be due to changes in the gut, rather than *vice versâ*. But if constipation has once been caused by the firmness of the fæces, by neglect of evacuation, or by mechanical or vital insufficiency of the bowels, it may be a potent factor in increasing any abnormality of the colon. By the mere bulk of the fæces dilatation may be produced; by the increased absorption of bacterial products the muscular wall may be injured; the presence of a hard fæcal mass may block a kinked gut. But in any given case it is well-nigh impossible to say how large a share constipation has had in accentuating the pre-existing condition. One criterion there is, however, which helps to distinguish between cases of primary and secondary colic dilatation, and that is the history. In cases in which the patient has had obstinate constipation since infancy there is a strong presumption that the colon is dilated. In cases where constipation appears for the first time in adult life, and is found to be associated with dilatation of the colon, the latter may be secondary, but it is even then impossible to be sure that the anatomical abnormality has not always existed but been overcome by muscular hypertrophy, and that in later years the hypertrophy fails and gives place to dilatation. Two further signs there are which seldom occur in secondary dilatation: these are great abdominal distension and visible peristalsis. If these tests—viz., history, distension, and visible peristalsis—be used to distinguish idiopathic dilatation of the colon from the mere results of chronic constipation, then it is found that in the latter group there are present in the colon a somewhat different group of changes from those above described. I have elsewhere [75] described a well-marked case of primary constipation, with its secondary consequences, and I may summarise them here as being: A dilated condition of the cæcum, ascending and transverse colon; kinking of the hepatic and splenic flexures, and the displacement, with kinking, of the transverse colon; downward dragging of the pyloric part of the stomach, and the consequent acute flexion of the duodenum.

Biliary lithiasis and appendicitis are also no doubt remotely connected with constipation; but in my case there was no evidence of any inflammatory adhesions binding the surface of the colon to neighbouring viscera. When I saw the specimen first, I thought that these did exist with the gall-bladder, but further consideration leads to the conclusion that it is merely a peritoneal ligament; and it is certainly remarkable that throughout the literature (except in Lane's papers) all mention of peritoneal adhesions is absent in the description of the actual cases. The facts illustrated by the specimen referred to differ from those in idiopathic dilatation very little. The differences are two: the dilated part of the colon is the upper portion, and there is no evidence of muscular hypertrophy, whereas in idiopathic dilatation it is the pelvic colon which is most often affected, and muscular hypertrophy is well marked. A further point of distinction lies in the sex incidence. In idiopathic dilatation of the colon males preponderate, in adults in the proportion of 3 or 2 : 1, whereas in chronic constipation the proportion is more than reversed. In Lane's series of 39 cases of "chronic constipation," for example, 5 were males and 34 were females (1 : 7).

How many of the other affections which may be found in any case of constipation can be regarded as resulting from this will be a matter of opinion or speculation. If we accept Metchnikoff's idea that the intestinal decomposition lies at the root of all senile tissue degeneration, then we shall be prepared to regard everything abnormal associated with constipation as resulting from that. For instance, in my case scoliosis, enteroptosis, suppuration, and dislocation of the hip may have occurred as the direct or remote results of absorption of bacteria and toxins from the colon; but such a view is utterly at variance with the spirit of scientific deduction, which demands evidence rather than speculation in support of theories.

Mr. Arbuthnot Lane [51] has, however, followed the speculative line in the treatment of this subject to its extreme limit. According to this author the following conditions are caused by chronic constipation: fixation of the colon, especially the ascending and pelvic portions, by peritoneal adhesions; atrophy of the wall of the sigmoid flexure; the formation of special "mesenteries" at the hepatic and splenic flexures which drag upon the colon and produce kinking; adhesions of the transverse colon to the adjacent limbs of the ascending and descending colon; adhesions at the base of the appendix, dragging upon the right kidney; distension of the small intestine; pain in the right renal region from dragging on "adhesions" at the hepatic flexure, and in the sacro-iliac region from the dragging of the cæcum; dilatation of the stomach by "gases of decomposition" and by the back pressure through the small intestine; offensive breath, with a general "grave-yard" smell; mental depression and drowsiness, loss of fat, pigmentation of the skin over the face and in the flexures; matting of the ovaries and Fallopian tubes, displacements of the uterus, and loss of uterine tone; cystic degeneration of the ovaries and breasts, and sterility. But as Lane has brought forward no detailed description of actual cases which bear out his facts and no evidence which supports his theories, they must stand as the mere expression of opinion which is not supported by that of other writers.

Regarding the peritoneal "adhesions" I have pointed out that these are often merely normal variations of peritoneal folds, and that the surface of the colon is remarkably free from adhesions to adjacent structures. The process by which the ascending colon becomes more firmly tied down to the parietes than is normal is explicable much more simply than by supposing its surface to be dragged down and fixed to adjacent structures by inflammation. When the colon dilates its peritoneal covering will be insufficient and will become stripped off from its posterior aspect, so that instead of only a fourth of its surface being without peritoneum, nearly a half may so become destitute. The same reasoning applies to changes in the length of the gut. When a fixed part of the colon increases in length it becomes thrown into folds, and the peritoneum covering it will stretch in the form of tight bands from fold to fold, instead of always dipping down into the crevices between the dilated pouches. If these bands were inflammatory they would probably be adherent to structures outside the bowel—which they are not—and would be tightly fixed to the bowel instead of being easily removed from it. But if adhesions are regarded as always resulting from some definite inflammatory

disease—e.g., appendicitis, gall-stones, or gastric ulcer—they will require direct surgical treatment, where this is possible, and even if obstinate constipation be associated with such conditions, it will be far more reasonable to classify these cases as chronic obstruction due to adhesions, rather than to confuse them with simple constipation or colic dilatation. In several of Lane's own cases (Cases 17, 19, and 21) this contention is proved by the sequence of events. That is to say, the patients had pain, vomiting, and constipation, the abdomen was opened, and adhesions were found connected with gastric ulcers. The cases were treated, nevertheless, as though due primarily to colic stasis by ileo-colostomy or excision of the colon. This treatment either proved fatal (Cases 17 and 19), or had to be followed by a subsequent gastro-enterostomy, after which the patient made a good recovery (Case 21).

To summarise, then, the etiological factors, it is evident that any or all of seven causes may combine to bring about the final condition in extreme dilatation of the colon. These are:—obstruction by fæcal impaction, increased length of the colon, kinking, muscular insufficiency, local muscular spasm, incoördinated nerve impulses, and constipation. But it cannot be certainly said that any one of these has been proved to be of primary and universal occurrence, the probability being that more than one factor exists primarily in most cases and that the others may play a secondary part later.

*The classification of these conditions* will depend largely on the view taken of their etiology. It is most commonly made into (1) primary or idiopathic, and (2) secondary or acquired dilatation, and although this distinction no doubt exists, it is of not much value because it is impossible to be sure that dilatation may not have existed for a long time in a latent condition. The more useful classification would be made on an anatomical basis, because this can always be made by radiography, and it is an important basis for treatment. In this we should distinguish three main groups: (1) proximal dilatation affecting the ascending and transverse colon and the cæcum; (2) distal dilatation affecting the pelvic colon, and much more rarely including the descending colon and rectum; and (3) general dilatation affecting the whole colon. And in cases of obstinate constipation without much dilatation this same classification will hold good if the term stasis be substituted for that of dilatation.

## *Treatment*

Whilst it is evident that in its extreme form "idiopathic" dilatation of the colon is one which requires surgical treatment, and that in its slight grades medical and dietetic measures will suffice, there must always remain an intermediate group of cases in which there is a difference of opinion as to what should be done.

*Diet.*—Dealing first with the slighter stages of the disease, most authors advise easily digested diet which leaves comparatively little residue—such being, of course, milk, fish, eggs, and white bread. But it is possible that in some cases the colon will react better when stimulated by bulky food residue, such as that left by brown bread, porridge, and vegetables, and Concetti[43] advocates such a diet as being the most satisfactory. There must, however, be some difficulty in determining if the colon is really emptying itself when fed with the coarse food. The motions may be bulky and even regular, but, on the other hand, there will probably be a larger residue left in the colon. This point could be decided only by mixing bismuth with the food and noting the condition of the colon by radiography.

*Drugs.*—In almost all cases these are useless, and they are worse than useless when great distension exists. Saline aperients, calomel, castor oil, and even croton oil cause some griping, but no evacuation of the bowels. One of my cases could take two drops of croton oil without any apparent result. Probably stimulating drugs such as strychnine, iron, and aloes will be more beneficial; and Grey[52] relates in one case how, after clearing out the colon by enemata, he was able by means of aloes and iron pills to restore the tone of the bowel.

*Enemata.*—Here, again, the use of rectal injections can only succeed if the bowel is capable of responding to the direct stimulation of distension, heat, or chemical agents, and if the injections can be thrown into the affected parts of the colon. Further, if an irregular spasm exists, as has been described in some cases, this spasm may be intensified by injections. Therefore it is that enemata have only a limited usefulness. Probably some form of oil injection is the most valuable, because it is much more slowly absorbed, and because it will soften the hard fæcal masses. In one of my cases[73] a pint of olive oil was injected by a long tube at night, and the next morning an enema of hot soap and water with one ounce of turpentine was administered. By this means a daily evacuation was procured when all other means had failed.

*Other tonic measures.*—When diet, drugs, and enemata seem likely to give relief, the use of massage and electricity will be of use in aiding the recovery. In theory it would seem that an electric stimulus was the most ideal treatment, but in practice its value seems to be little more than that here indicated—i.e., an adjuvant to other measures. This may be due to the physiological facts relating to the coördination of muscular contractions and nerve impulses. An electric stimulus may start a colic contraction, but this may increase an already existing spasm, or it may excite the anti-peristaltic wave more than the peristaltic contractions. Conditions which cause or favour enteroptosis should be avoided. These are the use of corsets and the usual attitude of defæcation. For these should be substituted an elastic abdominal belt and defæcation in a squatting position into a utensil on the ground. Physical exercise should be taken with the special view of strengthening the abdominal muscles.

*Surgical treatment.*—In cases of true idiopathic dilatation of the colon there can be no doubt that surgical treatment is demanded and should be performed with the least possible delay. If all the means indicated above have proved inefficacious, operation should be advised before the patient's general nutrition has suffered by emaciation and toxæmia. In cases where the diagnosis is doubtful and obstinate constipation is the most prominent feature, the indications for operative interference would seem to be as follows: A long history of constipation dating back to childhood and indicating probably a congenital defect in the colon; failure of diet, drugs, and enemata to afford permanent relief; marked and increasing distension of the abdomen; visible peristaltic contractions; progressive loss of flesh.

In comparing the results given by medical and surgical treatment respectively, Löwenstein[19] gives the following figures relating to 103 cases:—

| Result. | Medical (59 cases). | | Surgical (45 cases). | |
|---|---|---|---|---|
| Died | 39 cases (60 per cent.) | | 21 cases* (48 per cent. | |
| Unaltered | 4 „ | | 2 „ | |
| Improved | 9 „ | | 7 „ | |
| Cured | 7 „ (12 per cent.) | | 15 „ | (34 per cent.) |

* 3 had perforation at time of operation.

But it has to be borne in mind that many of these cases occurred at a period when surgical interference was only resorted to as a last resource. Lane[51] has published accounts of 39 cases of so-called chronic constipation on whom he operated with 9 deaths (23 per cent.), but of these 39 at least 17 are cases of inflammatory diseases (colitis 3, gastric ulcer or adhesions 5, intestinal adhesions, usually from appendicitis, 9), and excluding these there are 22 cases of simple colic stasis, with 5 deaths (22·7 per cent.). Ito and Goyesima[32] relate 21 cases treated by resection, with 14 good results and 6 deaths (28·5 per cent.). The actual operations which have been performed for these conditions are: Mechanically emptying the bowel, colostomy, colopexy, colo-colostomy, colo-proctostomy, ileo-colostomy, and colectomy.

*Removal of the bowel contents.*—In some instances it would appear that the colon is so inert that it cannot contract until it has been mechanically emptied of its contents, and it may be impossible to do this through the anus. Brooks,[57] in the case of a woman, 21 years old, found a hard vegetable concretion in an enormous pelvic colon. The bowel was excised, the mass removed, and she made a good recovery. Fletcher and Robinson,[58] in a boy, aged 13 years, removed the semi-solid fæces by simple mechanical manipulation through a laparotomy wound with a successful result. Hawkins[19] (Case 6) describes the case of a woman, aged 39 years, in whom the colon was incised and washed out, but she died soon afterwards.

*Colostomy.*—To simply fix the most dilated coil to the parietes and open it seems the simplest treatment, but it seldom gives satisfactory results (Hawkins's[19] case, where the boy, aged 1 year, died; Harris (quoted in my paper[73]),

when a further anastomosis was required). This is probably due to the fact that the most dilated coil is also the most inert, and has no power to empty itself. If an artificial anus is to be made it ought to be above the seat of dilatation, and as this will have to be, therefore, in the ileum or ascending colon, such an operation will be unsatisfactory, as it will give exit to a constant irritating stream of fluid fæces.

*Colopexy.*—When the dilatation affects the pelvic colon only, the chief element of obstruction may be due to the kinking of the bowel, either at the junction of the pelvic colon and rectum or by volvulus formation. In either case if the loop is anchored to the parietes this will be prevented, and in several instances this treatment has had good results (Woolmer,[53] Hawkins,[19] Roth,[23] Garré (quoted by Löwenstein[18]), Kummel), and in one of Hawkins's cases it succeeded even when anastomosis and resection had failed. This remarkable fact was due to the persistent re-formation of a redundant loop of pelvic colon which occurred first after the anastomosis of the limbs of the loop, and again after the first loop had been resected. An exactly similar sequence of events occurred in Richardson's[27] case.

*Colo-colostomy.*—This operation has also been chiefly employed in cases of dilated pelvic colon, the two limbs of the loop being joined together at their base. But inasmuch as this procedure requires that the remainder of the colon above and below the anastomosis should be normal it often fails, either from the formation of another loop or by some further kinking or fæcal obstruction. Makins[19] in one of Hawkins's cases did a lateral anastomosis of the limbs of a pelvic loop with success in a boy aged 7 years. But, as mentioned in the last paragraph, in other cases this operation has had to be followed by subsequent resection or colopexy.

*Colo-proctostomy.*—In Treves's case,[54] where the descending colon was dilated and the pelvic colon contracted, he excised the gut from the splenic flexure to the rectum and anastomosed the transverse colon to the rectum with excellent results.

*Ileo-colostomy.*—This is the most direct method of treating all conditions of dilated colon. By it the fæcal stream is diverted from the small intestine directly into the pelvic colon or into the upper part of the rectum. It is, however, not enough to make an anastomosis; the ileum must be cut off from the cæcum, otherwise the fæces will continue to pass on by the old channel into the dilated colon. The simplest procedure is to make a lateral anastomosis between the ileum and the pelvic colon, choosing the part of the gut as low down as possible which will come together easily. The advantage of the side-to-side junction is that it can be made as large as is necessary (about 5 centimetres long), and will not have much tendency to contract. When the anastomosis is complete, if there is occasion for haste a simple ligature round the ileum below the stoma will be enough to occlude it, and actual division is unnecessary. But usually the bowel is divided between clamps, preferably by the thermo-cautery, and the two ends are sewn up by continuous sutures. When the ileum is thus anastomosed to the pelvic colon a mesenteric band is formed, stretching across the brim of the pelvis, and the space behind this should be obliterated by one or two stitches, attaching the mesentery to the parietal peritoneum, otherwise a loop of small intestine may easily become strangulated behind the band. I have never seen any reference to this point, but I noticed the formation of this dangerous band in one of my cases, and ever since I have employed the method of stitching it back against the parietes with very satisfactory results. In two of Lane's[51] cases, one a man aged 55 years and the other a woman aged 21 years, death from intestinal obstruction followed an anastomosis operation, occurring six months after, and immediately after, the operation in the respective cases. In neither case was a post-mortem examination performed, but it is possible that the mesenteric band was the cause in both these cases.

The treatment of the distal stump of ileum affords also a matter for discussion. Except in cases of resection of the colon it has always been dropped back into the abdomen after suturing. But if the colon proximal to the anastomosis is dilated either by gas or fæces it would seem desirable to provide some means of evacuating this. The readiest method of doing this is to tie up the distal piece of ileum with a purse-string suture and thrust the gut through a stab wound in the right iliac fossa. After the median incision has been closed, a Paul's tube is tied into the ileum, and through this the gas and the fæces in the large bowel are allowed to escape as much as they will, and then the whole colon is gently irrigated with hot water, some of which washes on into the rectum and some runs back through the tube. In this way the entire fæcal accumulation in the colon can be removed and the chief source of toxæmia eliminated. If after this the colon remains empty the ileal fistula can be closed, but if fæces continue to be passed by this route—as was the case so remarkably in Harris's case—the large colon will have to be removed down to the splenic flexure or to the anastomosis.

Ileo-colostomy is a much better method of treatment than any form of colo-colostomy for two reasons. In the first place, it excludes the greater part of the dilated colon, and, in the second place, it provides a fluid stream of fæces which will pass more readily on to the rectum and anus than the solid fæces which pass down the colon. Hertz[78] remarks that in cases of chronic constipation which he has examined by the X rays the stasis occurs in the pelvic colon, and he deduces from this fact that it would be useless in such cases to exclude or excise the proximal parts of the colon. But this ignores the change in consistency which takes place in the fæces as they pass down the large intestine. A pelvic colon may be incapable of passing on solid fæcal masses into the rectum, but may be quite capable of dealing with the fluid contents of the ileum.

Examples of cases treated by ileo-colostomy are given by Lane,[51] who treated 10 cases by this method alone with 3 deaths; in 9 cases a subsequent colectomy had to be performed, 2 of whom died; in 20 cases the anastomosis was followed by a colectomy performed at the same time, and of these 4 died. In my case[75] ileo-colostomy gave a good result for a time, but a further colectomy was necessary later, and the same occurred in Harris's patient. Two further points have to be discussed in connexion with the subject of the exclusion of the greater part of the colon: these are the effects produced upon the nutrition of the patient, and the necessity of removing the colon as well as partially excluding it.

The first of these questions has been the special object of the research detailed in my former paper.[75] We have proved by the estimation of the quantity and composition of the fæces passed by these two patients that there is no metabolic loss involved by the operation. In both cases the amount of proteid, fat, carbohydrate, and water passed is not greater than falls within the normal average. A still more striking proof of the actual improvement in nutrition is afforded by the patients' weight. The boy increased three stones after the colon had been excluded, and the woman increased one stone after excision of the greater part of the colon.

*Colectomy.*—Excision of a part or the whole of the dilated colon remains to be considered. It is undoubtedly the most radical method of treatment and the only one which gives uniformly satisfactory results—that is, if the patient recovers from the operation. In some cases (Treves,[54] Hawkins,[19] Richardson,[27] Clutton[30]) only a portion of the lower colon has been removed, but in more than one of these (Hawkins, Richardson) a further operation of resection or colopexy has been necessitated by the formation of a fresh volvulus. Removal of the whole colon down to or including the pelvic colon has been reported in 53 cases. Lane[51] gives 20 cases where primary colectomy was performed with 4 deaths, and 9 cases after a former ileo-colostomy with 2 deaths. Ito and Goyesima[32] relate 21 cases with 6 deaths, Bossowski 1 successful case, Harris's case died, and my own case recovered. In all, there have been 13 deaths, making an operative mortality of 24·5 per cent. In all the cases that survived the patients were cured of their symptoms except in the following: Ito and Goyesima had one case which remained unchanged; Lane had one which only showed "moderate improvement," one which gave only a "fair result," and two which required further operation for gastric complications.

The fact that so many cases have required colectomy after a successful ileo-colostomy proves that the colon, although cut out partially from the intestinal circuit, still causes severe symptoms. In my own case these were pain and the occurrence of a tumour due to the distended part of the proximal colon. Harris's case[75] is particularly instructive in this respect. He first performed a right-sided colostomy in a woman who had life-long constipation. Subsequently the ileum was divided and anastomosed to the pelvic colon,

but after a temporary relief with natural motions the fæces again came out from the opening in the ascending colon and none passed by the rectum. This induced him to do a resection of the colon which, however, proved fatal. Now in this case there must have been an anti-peristaltic movement in the colon, which is an exaggeration of the normal anti-peristalsis; and it is probable that this occurs in the other cases in which the colon has been partially excluded. In these cases the proximal part of the colon forms a blind pouch, and the anti-peristalsis will serve to drive fæcal material, mucus, and gas into this, causing painful distension and decomposition. In my case the woman had diarrhœa, with the passage of blood and mucus, after the ileo-colostomy, but this ceased after the colon had been removed.

The age and general condition of the patient when operation is undertaken will, of course, greatly affect the prognosis. The youngest recorded successful result is that of Bossowski, whose patient was only 2 years old. In clear cases of idiopathic dilatation all successful cases of operation have been younger than 30 years (Löwenstein); and although Lane has had 19 cases over 30 years on whom he has operated, these include no less than six of his fatal cases. (Two of his remaining fatalities were, in my opinion, due to primary gastric disease, and thus all except one of the fatal operations for colic stasis were in patients over 30.)

In the lesser grades of disease, where obstinate constipation without marked distension exists, it seems unreasonable to submit patients to so severe an ordeal as that of excision of the colon. One of two other measures ought to be tried first, and probably in the majority of cases will serve for a cure, and in the remainder excision can be reserved as a last resort. The first of these is a lateral anastomosis between the ileum and pelvic colon without division of the former. Mansell Moullin[76] has related several cases where this succeeded and he has had no fatalities. The second is a still simpler operation—viz., appendicostomy—which, as far as I know, has had no mortality, although it has now been often performed for various reasons. Keetley[77] has reported several cases, and the following instance in my own practice will serve as an example.

The patient, an unmarried woman, aged 27 years, was admitted to the Cossham Hospital on Jan. 21st, 1909, suffering from sickness and abdominal pain. She had a long-standing history of dyspepsia and constipation, the bowels never acting without the use of aperients. She frequently vomited, but with no special relation to food. The pain was diffused all over the abdomen, and for the past six months had been so severe as to prevent her from working. Her physical condition showed little abnormal. She was rather thin; the abdomen was not distended, and she had a tender retroverted uterus. On Feb. 15th I fixed the latter by an Alexander-Adams operation, but this had but little effect on her pain. The constipation and sickness continued. It was very difficult to decide whether these symptoms were due to an atonic colon or to a gastric ulcer; but the want of relation between the vomiting and the taking of food made me decide against the latter diagnosis. On March 19th I performed an appendicostomy, and whilst she remained in the hospital for three weeks the colon was washed out daily and she gradually improved. On her return home she quickly relapsed when the lavage had been stopped. She came into the hospital again and was taught to wash out the bowel herself. She has continued to do this regularly since and is now at work. I saw her in September, and her general condition was excellent. The pain and sickness have quite ceased and she has gained weight considerably. She is anxious to dispense with the appendicostomy, but I have advised against this.

Of course, this subject of the surgical treatment of chronic constipation is one which will always evoke a great difference of opinion from both surgeons and physicians, but it may reasonably be urged that, when medical means, and especially enemata, have failed to give relief, then some surgical means ought to be employed. In the cases with no marked or progressive distension appendicostomy or a simple lateral anastomosis between the ileum and pelvic colon will probably serve as a cure. Primary colectomy or colectomy following ileo-sigmoidostomy ought to be reserved for the more typical cases of idiopathic dilatation of the colon, and then only employed after the simpler surgical means have failed to effect a cure.

*Bibliography.*—1. Baron: Jahrbuch für Kinderheilkunde, 1907, p. 741 2. Billard: Krankheiten der Neugebornen, Weimar, 1829. 3. Ammon: Die angebornen chirurgischen Krankheiten des Menschen, Berlin, 1842. 4. Oulment: Bulletin de la Société d'Anatomie de Paris, 1843, p. 336. 5. Favaill: Gazzetta Medica, Milano, 1846, p. 219. 6. Banks: Dublin Quarterly Journal of Medicine, 1846. 7. Gay: Transactions of the Pathological Society of London, 1854, vol. v., p. 174. 8. Henoch: Beiträge zur Kinderheilkunde, Berlin, 1861, p. 123; Vorlesungen über Kinderheilkunde, Berlin, 1899. 9. Jacobi: American Journal of Obstetrics, 1869; Archives of Pediatrics, 1893. 10. Barth: Wagner's Archiv der Heilkunde, 1870, p. 119. 11. Peacock: Transactions of the Pathological Society of London, 1872, vol. xxxiii., p. 104. 12. Gee: St. Bartholomew's Hospital Reports, vol. xx., p. 19. 13. Bristowe: Brit. Med. Jour., 1885, vol. i., p. 1085. 14. Morris: Ibid., 1886, vol. ii., p. 1211. 15. Fütterer and Middledorpf: Virchow's Archiv, 1886, p. 555. 16. Gaum: Revue Mensuelle des Maladies de l'Enfance, 1886, p. 155. 17. Hirschsprung: Jahrbuch für Kinderheilkunde, 1888, p. 1. 18. Löwenstein: Centralbatt für die Allgemeine Pathologie, December, 1907, p. 929. 19. Hawkins: Brit. Med. Jour., 1907, vol. i., p. 477. 20. Tittel: Wiener Klinische Wochenschrift, 1901, p. 903. 21. Hobbs and de Richmond: La Médecine Moderne, 1898, p. 652. 22. Johannessen: Revue Mensuelle des Maladies de l'Enfance, 1900, p. 65. 23. Roth: Archiv für Klinische Chirurgie, 1906, ii., 1. 24. Rolleston and Haward: Transactions of the Clinical Society of London, 1895, vol. xxix., p. 201. 25. Langmead: Ibid., 1906. 26. Fitz: American Journal of the Medical Sciences, 1899, vol. cxviii., p. 125. 27. Richardson: Boston Medical and Surgical Journal, 1901, vol. cxliv., p. 155. 28. Dodd: THE LANCET, 1892, vol. i., p. 1299. 29. Herringham and Bruce Clarke: St. Bartholomew's Hospital Reports, 1895, p. 57. 30. Berry: Transactions of the Pathological Society of London, 1894, p. 84. 31. Skelding: British Journal of Children's Diseases, 1907. 32. Ito and Goyesima: Deutsche Zeitschrift für Chirurgie, 1907, vol. lxx. 33. Tuffier: Bulletins et Mémoires de la Société de Chirurgie de Paris, 1907. 34. Fildes: American Journal of the Medical Sciences, February, 1900. 35. Hand and Stewart: Pediatrics, 1900, vol. ix., p. 123. 36. Hughes: Transactions of the Philadelphia Pathological Society, vol. xiii. 37. Olstreich: Berliner Klinische Wochenschrift, 1893, p. 352. 38. Oliver: Brit. Med. Jour., 1896, vol. ii., p. 839. 39. Clutton: Transactions of the Clinical Society of London, 1897. 40. Chapman: Brit. Med. Jour., 1878, vol. i., p. 566. 41. Berghinz: La Clinica Medica Italiana, 1901, p. 26. 42. Fenwick: Brit. Med. Jour., 1900, vol. ii., p. 564. 43. Concetti: Archiv für Kinderheilkunde, 1899, p. 319. 44. Bernheim Karrer; Verhandlungen der Gesellschaft für Kinderheilkunde, 1906, p. 170. 45. Gourevitch: Prager Medicinische Wochenschrift, 1904, p. 607. 46. Graanboom: Nederlandsche Tijdschrift voor Geneeskunde, 1905, vol. i., p. 442. 47. Bjorksten: Jahrbuch für Kinderheilkunde, 1902, p. 714. 48. Pfisterer: Ibid., 1907, p. 160. 49. Bing: Archiv für Kinderheilkunde, 1906, p. 59. 50. Roy Des Barres: Gazette des Hôpitaux, 1903, vol. ii., p. 871. 51. Lane: Operative Treatment of Chronic Constipation (London: Medical Publishing Company); Brit. Med. Jour., 1908, vol. i., p. 126. 52. Grey: Ibid., 1905, vol. i., p. 353. 53. Woolmer: Ibid., 1899, vol. i., p. 1330. 54. Treves: THE LANCET, 1898, vol. i., p. 276. 55. Wilms: Münchener Medicinische Wochenschrift, 1905, p. 2061. 56. Kredel: Zeitschrift für Klinische Medicin, vol. liii., p. 9. 57. Brookes: Brit. Med. Jour., 1905, vol. i., p. 1035. 58. Fletcher and Robinson: Ibid., 1905, vol. i., p. 991; 1907, vol. i., p 370. 59. Hale White: Allbutt and Rolleston's System of Medicine, vol. iii. 60. Escherich: Mittheilungen des Vereins der Aerzte in Steiermark, 1901; Wiener Klinisch-Therapeutische Wochenschrift, 1906, No. 3. 61. Stirnimann: Korrespondenzblatt für Schweizer Aerzte, 1905, p. 569. 62. Cheadle: THE LANCET, 1886, vol. ii., p. 1064; 1898, vol. i., p 399. 63. Goodhart: Transactions of the Clinical Society of London, vol. xiv., p. 34; vol. xxxvi., p. 203. 64. Griffith: American Journal of the Medical Sciences, 1899, vol. ii., p. 283. 65. Hichens: THE LANCET, 1898, vol. ii., p. 1121. 66. Little and Calloway: Transactions of the Pathological Society of London, vol. iii., p. 106. 67. Money and Paget: Transactions of the Clinical Society of London, 1888, vol. xxi., p. 103. 68. Murray: Annals of Surgery, November, 1903. 69. Osler: Johns Hopkins Hospital Bulletin, vol. iv., p. 30; Archives of Pediatrics, 1893, vol. x., p. 113. 70. Pitt: Transactions of the Pathological Society of London, 1895, vol. xlvi., p. 66. 71. Walker and Griffith: Brit. Med. Jour., 1893, vol. ii., p. 230. 72. Groynne: Reports of the Society for the Study of Disease in Children, vol. ii. 73. Bossowski: Klinisch-Therapeutische Wochenschrift, 1899, p. 1577; Vorträge an dem xi. polischem chirurgischem Kongress zu Krakau, 1901. 74. Geddes: Journal of Anatomy and Physiology, January, 1909, p. 182. 75. Groves and Walker Hall: Proceedings of the Royal Society of Medicine, February, 1909. 76. Mansell Moullin: THE LANCET, 1909, vol. i., p. 156. 77. Keetley: Proceedings of the Royal Society of Medicine, 1909. 78. Hertz: Ibid., 1908, Medical Section, p. 119.

Clifton, Bristol.

ROYAL INSTITUTION.—The following are amongst the lecture arrangements at the Royal Institution before Easter: Mr. W. Duddell, a Christmas course of six illustrated lectures on Modern Electricity, adapted to a juvenile auditory, to be given on the Tuesdays, Thursdays, and Saturdays in the fortnight after Christmas Day; Professor W. A. Herdman, three lectures on the Cultivation of the Sea; Professor F. W. Mott, Fullerian professor of physiology, R.I., six lectures on the Emotions and their Expression; Professor Silvanus P. Thompson, three lectures on Illumination, Natural and Artificial; Professor Sir J. J. Thomson, six lectures on Electric Waves and the Electromagnetic Theory of Light. The Friday evening meetings will commence on Jan. 21st, when Professor Sir James Dewar will deliver a discourse on Light Reactions at Low Temperatures.

# THE RÔLE OF FATS IN THE TREATMENT OF DISORDERS OF THE STOMACH.[1]

BY F. CRAVEN MOORE, M.D., M.SC. VICT., M.R.C.P. LOND.,

HONORARY PHYSICIAN TO THE ANCOATS HOSPITAL, MANCHESTER; LECTURER ON MEDICINE IN THE UNIVERSITY OF MANCHESTER;

AND

R. L. FERGUSON, M.D. VICT.,

LATE HOUSE PHYSICIAN TO THE ANCOATS HOSPITAL, MANCHESTER.

THE use of fat in the treatment of gastric disorders, not merely as a foodstuff, but with the idea of producing a definite therapeutic effect on the disordered secretory activity of the stomach, is of comparatively recent development, and is based on the recognition of the frequency with which excessive secretory activity of the gastric glands obtains as a pathological condition, and on the demonstration of the depressant action of fats on the activity of normal gastric secretion.

It had long been suspected that the presence of fats in the stomach interfered, in some way or other, with gastric digestion, a belief which was in some measure confirmed by the observation of Penzoldt, who found that a mixture of coffee and cream yielded a lower acidity of the stomach contents than coffee alone, and more conclusively by the later exact observations of Ewald and Boas who showed that the addition of bacon fat to the test breakfast associated with their names resulted in a prolongation of the period of gastric digestion and a marked diminution in the amount of free hydrochloric acid in the stomach contents. As at that period it was the prevalent belief that any deviation from the normal in the functional activity of the stomach must be in the direction of deficiency, and that the subjective manifestations of such deviation depended upon organic acid and gaseous fermentations initiated as the immediate consequence of deficiency in the antiseptic hydrochloric acid and stagnation of the contents from deficient motor power, the results of Ewald and Boas served but to emphasise the belief that the administration of fats in gastric disorders, and particularly in such as accorded with the type of acid dyspepsia, was contra-indicated in that they would induce further depression of functional activity and provide a possible source for the noxious acids themselves.

The investigations of the German school, and particularly those of Riegel and his followers, into the secretory activity of the stomach in gastric disorders demonstrated not only that excessive secretory activity of the gastric glands could obtain as a pathological condition, but that such was even more frequent than defective activity, and that in the so-called acid dyspepsia the frequently excessive acidity of the stomach contents was due not to organic acids but to an abnormally high content in hydrochloric acid itself. This conception of the disorders of secretory activity has been generally confirmed in its main theses, and in this country, although belief in the acid dyspepsia of organic acid fermentation still lingers, the frequency of pathological hypersecretion is now well recognised. To the brilliant investigations of Pawlow and his co-workers we are indebted for the basis of a more accurate appreciation of the nature and origin of these disorders of functional activity and also for suggestions as to their rational treatment. The observations of Chigin, Lobasoff, Wirschubsky, Lintwareff, and Sokoloff in the laboratories of Pawlow established that the liquid fats, olive oil and cream, were devoid of any excitative influence on gastric secretion when introduced directly into the stomach of the dog, and that their presence exerted an inhibitory influence on the normal energy of the secretory process excited by other foodstuffs.

Following on this demonstration of the depressant action of fats on the secretory activity of the stomach in the dog, certain continental observers, notably Strauss, von Aldor, Backmann, Akimow-Peretz, Piontkowski, Cohnheim, Walko, and others, began the administration of liquid fats in such morbid conditions of the human stomach as were associated with hyperacidity of the stomach contents. At first cream and butter were employed by Backmann, then emulsions of almond oil by Akimow-Peretz and Strauss and von Aldor, and, lastly, pure olive oil by Cohnheim, Walko, and others. The results recorded were, with but few exceptions (Ewald, Fischl, Blum), so beneficial in alleviating the subjective discomfort and in improving the nutrition of the patient that the method well-nigh attained the dignity of an "oil-cure." Our own observations have confirmed in great measure the beneficial results of the administration of liquid fats in conditions of hyperacidity claimed by these previous investigators. They have demonstrated perhaps more completely than had been previously done the marked effect of such fats in diminishing the acidity of the stomach contents, and they have opened up some problems for further investigations.

It has been my (F. C. M.) practice at the Ancoats Hospital to include in the routine examination of such cases as manifested symptoms of gastric disorder (unless contra-indicated) a simple estimation of the secretory activity of the stomach. The method employed consists in the administration first thing in the morning on the empty fasting stomach of a modified Ewald-Boas test breakfast, modified to obtain what I regard as being of prime importance for comparative results, constancy of physical character and composition, consisting of 10 ounces of weak tea without milk or sugar, and four breakfast biscuits (Huntley and Palmer), which average about 30 grammes. The stomach contents are removed after an interval of one hour, the volume and appearance noted, and in the filtrate the amount of free hydrochloric acid and the total acidity are estimated approximately by titration with decinormal sodium hydrate—solutions of dimethylamidoazobenzol and phenol-phthalein respectively being employed as indicators. The results are stated in terms of the number of cubic centimetres of decinormal soda solution required to neutralise the respective acidities in 100 cubic centimetres of the filtrate. The peptic power of the filtrate is estimated by the length of a column of coagulated egg-albumin digested in 24 hours at 37·5° C. according to the method of Mett, and in some cases an approximation to the relative content in pepsin itself is made by the dilution method of Schiff and Nierstein.

This systematic investigation of the secretory activity of the stomach in all cases with manifestations of gastric disorder has demonstrated the frequency with which excessive secretion obtains, a feature which becomes obvious in the series of control analyses in the accompanying tables on comparing the values for free HCl and total acidity with the normal values, 20–40 and 40–60 respectively, for such a meal.

With the appearance of Cohnheim's paper on the employment of large doses of olive oil this method of treatment was tried in a few cases, and with such obviously beneficial results, not only in diminishing the acidity of the stomach contents, but also on the subjective discomfort and on the general nutrition of the patient, that further investigation of the influence of fats appeared desirable. In some 62 cases in which there were subjective manifestations of gastric disorder, either with or without indications of organic disease of the stomach, the effect of the administration of oil of sweet almonds on the secretory activity of the stomach was determined. On consecutive days a plain test breakfast and a test breakfast preceded 30 minutes by one ounce of almond oil was given, and in the stomach contents the free HCl and the total acidity were estimated; in certain of the cases the digestive power of the stomach contents (peptic and tryptic) was also determined by the method of Mett. The stomach contents after the oil breakfast separated on standing into three layers—oil on the surface, the fluid contents with its granular sediment below, and between the two a narrow layer of emulsified oil, and but for the presence of the oil the contents were similar in appearance to those after the control meal; in no instance was there any evidence of the presence of bile pigments or of variations in the mucous content, and the quantity varied quite irregularly, being in some greater in others less than in the control.

The results of the analyses (see table) expressed in averages where a series of observations were made on any one case, show without exception that the administration of oil is associated with a marked reduction in the acid values, free HCl and total acidity, of the stomach contents. Although it is well recognised that in any individual, normal or otherwise, the acid values of the stomach contents, removed at a

[1] A paper communicated to the Medical Section of the Royal Society of Medicine on Nov. 23rd, 1909

*Gastric Ulcer.*

| No. | Sex and age. | Plain T.B. | | Oil T. B | | Difference. | |
|---|---|---|---|---|---|---|---|
| | | HCl. | .A. | HCl. | T.A. | HCl. | T.A. |
| 1 | M., 48 | 46 | 82 | 37 | 73 | 9 | 9 |
| 2 | M., 33 | 40 | 80 | 37 | 60 | 3 | 20 |
| 3 | M., 32 | 40 | 65 | 31 | 52 | 9 | 13 |
| 4 | F., 37 | 13 | 34 | Trace. | 18 | 13 | 16 |
| 5 | F., 28 | 71 | 95 | 52 | 74 | 19 | 21 |
| 6 | F., 38 | 60 | 90 | 48 | 82 | 12 | 8 |
| 7 | F., 26 | 70 | 100 | 45 | 64 | 25 | 36 |
| 8 | F., 40 | 35 | 51 | 30 | 42 | 5 | 9 |
| 9 | F., 27 | 65 | 90 | 41 | 62 | 24 | 28 |
| 10 | M., 25 | 49 | 70 | 42 | 50 | 7 | 20 |
| 11 | F., 24 | 70 | 89 | 35 | 53 | 35 | 36 |
| 12 | F., 30 | 65 | 90 | 39 | 58 | 26 | 32 |
| 13 | F., 22 | 42 | 60 | 16 | 30 | 26 | 30 |
| 14 | F., 28 | 46 | 65 | 32 | 44 | 14 | 21 |
| 15 | M., 60 | 40 | 71 | 25 | 56 | 15 | 15 |
| 16 | M., 64 | 37 | 86 | 28 | 52 | 9 | 34 |
| 17 | M., 46 | 40 | 58 | 36 | 49 | 4 | 9 |
| 18 | F., 24 | 30 | 56 | 12 | 32 | 18 | 24 |
| 19 | F., 47 | 56 | 78 | 32 | 58 | 24 | 20 |
| 20 | F., 42 | 47 | 64 | 10 | 22 | 37 | 42 |
| 21 | M., 28 | 48 | 66 | 44 | 62 | 4 | 4 |
| 22 | M., 18 | 48 | 74 | 3 | 20 | 45 | 54 |
| 23 | M., 0 | 50 | 74 | 45 | 72 | 5 | 2 |
| 24 | M., 40 | 34 | 60 | 28 | 53 | 6 | 7 |
| 25 | F., 24 | 5 | 62 | 15 | 22 | 30 | 40 |
| 26 | M., 28 | 0 | 8 | 32 | 42 | 28 | 36 |
| | *Duodenal Ulcer.* | | | | | | |
| 27 | M., 54 | 42 | 6 | 30 | 56 | 12 | 9 |
| 28 | M., 30 | 48 | 64 | | 33 | 24 | 31 |
| 29 | M., 50 | 34 | 54 | 14 | 30 | 20 | 24 |
| | *Carcinoma of Stomach.* | | | | | | |
| 30 | M., 67 | 18 | 34 | 10 | 20 | 8 | 14 |
| 31 | M., 48 | 0 | 14 | 0 | 12 | — | 2 |
| 32 | M., 67 | 12 | 18 | 0 | 8 | 12 | 10 |
| | *Nervous Dyspepsia.* | | | | | | |
| 33 | F., 28 | 8 | 49 | 8 | 18 | 20 | 31 |
| 34 | F., 22 | 39 | 55 | 17 | 38 | 22 | |
| 35 | F., 32 | 60 | 78 | 34 | 50 | 26 | 28 |
| 36 | M., 30 | 32 | 52 | 20 | 40 | 12 | 12 |
| | *Dilatation of Stomach (Atonic).* | | | | | | |
| 37 | M., 58 | 34 | 70 | 10 | 35 | 24 | 35 |
| 38 | F., 19 | 22 | 45 | 18 | 34 | 4 | 11 |
| 39 | F., 57 | 20 | 42 | 15 | 40 | 5 | 2 |
| 40 | M., 38 | 43 | 69 | 30 | 63 | 13 | 6 |
| 41 | F., 59 | 30 | 54 | 10 | 26 | 20 | 28 |
| 42 | M., 42 | 12 | 32 | Trace. | 14 | 12 | 18 |
| 43 | M., 35 | 28 | 46 | 10 | 25 | 18 | 21 |
| | *Alcoholism.* | | | | | | |
| 44 | M., 38 | 27 | 50 | 15 | 32 | 12 | 18 |
| 45 | M., 37 | 58 | 98 | 52 | 85 | 6 | 13 |
| 46 | M., 45 | 16 | 41 | 10 | 34 | 6 | 7 |
| 47 | M., 24 | 28 | 54 | Trace. | 18 | 28 | 36 |
| 48 | M., 39 | 22 | 36 | 10 | 24 | 12 | 12 |
| 49 | M., 40 | 43 | 68 | 32 | 60 | 11 | 8 |
| 50 | F. | 30 | 56 | 13 | 37 | 17 | 19 |
| 51 | M., 54 | 20 | 32 | Trace. | 12 | 20 | 20 |
| 52 | M., 60 | 45 | 67 | 39 | 62 | 6 | 5 |
| | *Constipation.* | | | | | | |
| 53 | F., 67 | 20 | 40 | 16 | 32 | 4 | 8 |
| 54 | M., 36 | 14 | 48 | 10 | 40 | 4 | 8 |

T.B. = test breakfast. T.A. = total acidity.

*Miscellaneous.*

| No. | Sex and age. | Diagnosis. | Plain T.B. | | Oil T.B. | | Difference. | |
|---|---|---|---|---|---|---|---|---|
| | | | HCl. | T.A. | HCl. | T.A. | HCl. | T.A. |
| 55 | M., 35 | Gastritis. | 28 | 46 | 10 | 25 | 18 | 21 |
| 56 | M., 27 | Influenza. | 35 | 59 | 29 | 50 | 6 | 9 |
| 57 | M., 55 | Aortic disease. | 35 | 52 | 26 | 46 | 9 | 6 |
| 58 | M., 26 | Mitral disease. | 35 | 68 | 10 | 43 | 25 | 25 |
| 59 | M., 64 | Mitral disease. | 50 | 65 | 18 | 35 | 32 | 30 |
| 60 | F., 37 | Severe anæmia. | 17 | 42 | 11 | 36 | 6 | 6 |
| 61 | M., 67 | Phthisis. | 40 | 57 | 17 | 44 | 23 | 13 |
| 62 | M., 49 | Phthisis. | 42 | 62 | 24 | 45 | 18 | 17 |

T.B. = test breakfast. T.A. = total acidity.

*Table of Averages.*

| Diagnosis. | No. | Plain T.B. | | Oil T.B. | |
|---|---|---|---|---|---|
| | | HCl. | T.A. | HCl. | T.A. |
| Total cases ... ... ... | 62 | 38·1 | 60·7 | 23·3 | 42 |
| Gastric ulcer ... ... | 26 | 48·7 | 72·5 | 30·5 | 50 |
| Duodenal ulcer ... ... | 3 | 41 | 61 | 23 | 40 |
| Carcinoma ... ... ... | 3 | 10 | 22 | 3·3 | 13·3 |
| Nervous dyspepsia ... | 4 | 40 | 58·5 | 20 | 36·5 |
| Dilatation of stomach | 7 | 26 | 51 | 13·2 | 34 |
| Alcoholism ... ... ... | 9 | 32 | 55·8 | 19 | 40·4 |
| Constipation... ... ... | 2 | 17 | 44 | 13 | 36 |
| Miscellaneous ... ... | 8 | 35·2 | 56 | 18 | 40·5 |

definite time after a meal of constant composition, vary within somewhat wide limits, yet the constancy with which they are diminished after the exhibition of oil in so large a number of cases precludes the possibility of coincidence.

The effect, though constant, presents some interesting variations in degree not only in the several types of gastric disorder but also in the same type and the same individual on different occasions. On averaging the results in each of the several series it appears that the greatest absolute diminution in the acid values after the administration of oil obtains in those which present the highest average acidities with the plain test breakfast, and, as appears from a comparison of the average results, in the cases of gastric ulcer, duodenal ulcer, and nervous dyspepsia, irrespective of the presence or absence of any lesion of the stomach. In the individual cases also this is true of the majority; thus in 12 cases with a free HCl value of 50 or more the average absolute diminution of this value is 20, and in all but 4 the individual diminution ranges from 24 to 35.

In the cases on which a series of observations were made it was noted that whilst the diminution in the acidity was invariable it differed in degree on different occasions, and further, what is of particular interest, the effect of the oil was apparently limited to the period immediately following its administration; in no instance was there any evidence of its having a more enduring effect on the acid values of the stomach contents. The averages, and also the majority of the individual observations, further show that the absolute diminution of the total acidity exceeds that of the free HCl. This result is difficult of interpretation, since it apparently depends on a diminution of other factors than the HCl, free or combined (assuming the latter to remain approximately constant with the constant proteid content of the test meal), which contribute to the total acidity of the stomach contents, and which it might be anticipated would be increased by the liberation of fatty acids in the splitting of the neutral fat by the hydrochloric acid and the possible gastric lipase.

Turning to the peptic activity of the stomach contents it was found in 12 cases in which observations were made that the digestive power was diminished with the acid values, a result in part, no doubt, of the deficiency in HCl, but also, as shown by the dilution method, of an absolute diminution

in the peptic content of the filtrate, and which is obvious in all but No. 25 of the following six observations.

| No. | Test-meal. | HCl. | Total acidity. | Pepsin.* | | | Trypsin. |
|---|---|---|---|---|---|---|---|
| | | | | *a* | *b* | *c* | |
| 25 | Plain. | 45 | 62 | 42 | 27 | 9 | 0 |
| | Oil. | 15 | 22 | 2·25 | 64 | 12 | 0 |
| 26 | Plain. | 60 | 78 | 182 | 144 | 42 | 0 |
| | Oil. | | 42 | 81 | 41 | 12 | 0 |
| 28 | Plain. | 48 | 64 | 182 | 144 | 30 | 0 |
| | Oil. | 24 | 33 | 41 | 38 | 6 | 0 |
| 33 | Plain. | 28 | 49 | 72 | 67 | 27 | 0 |
| | Oil. | 8 | 18 | — | 13 | 1 | 0 |
| 34 | Plain. | 39 | 55 | 60 | 81 | 22 | 0 |
| | Oil. | 17 | 38 | 25 | 36 | 17 | 0 |
| 35 | Plain. | 60 | 78 | 225 | 132 | 36 | 0 |
| | Oil. | 34 | 50 | 41 | 84 | 30 | 0 |

* *a*, Filtrate alone. *b*, Fourfold dilution with $\frac{N}{10}$ HCl. *c*, Sixteenfold dilution with $\frac{N}{10}$HCl.

In three cases the oil was given simultaneously with the test-meal and resulted in a similar diminution of the acid values of the stomach contents.

The explanation of the phenomena following the administration of fats on a subsequent meal is a problem for the exact methods of experimental physiology rather than for the methods of clinical research. The investigations which have dealt with the matter by the exact methods of Pawlow leave it still in doubt whether the observed phenomena are due to a true depression of gastric secretion or to dilution and neutralisation by regurgitant alkaline duodenal contents.

Pawlow from his earlier experiments, in which the introduction of olive oil directly into the stomach of the dog by means of a sound resulted in a marked depression of secretory activity as tested by a subsequent meal of flesh, concluded that fat inhibits the normal energy of the secretory process, that the inhibition is central by reflex stimulation of the inhibitory nerves of the glands or the inhibitory centres of these nerves, and is not a mere mechanical effect of the covering over the mucous membrane and preventing excitation of the nerve endings. With the object of testing whether oil might act in some such mechanical way we made a number of observations in which oil was replaced by petroleum, but in no instance was there any diminution of the acid values of the stomach contents.

The later experiments of Sokoloff on animals with gastric and duodenal fistulæ showed that the presence of undigested fat in the duodenum suffices to inhibit the secretion of gastric juice and he concluded that the inhibitory effect of fat originates chiefly from the surface of the duodenal mucous membrane and not from the stomach. Boldyreff, on the other hand, following up some observations of Damaskin, found that the introduction of oil into the stomach of the dog led to an undoubted flow of bile, pancreatic juice, and intestinal juice into the stomach. Experimenting on himself and one of his associates, he found that the stomach contents removed one or one and a half hours after the ingestion of 80 cubic centimetres of a 2 per cent. solution of oleic acid in olive oil contained trypsin and a lipase of pancreatic origin. These investigations have been repeated on the human subject by already a considerable number of observers, Volhard, Faubel, Mohr, Schittenhelm, Levinsky, Molnar, Mahlenbrey, and others, but with another object—namely, of obtaining *viâ* the stomach a sample of the duodenal contents in order to estimate the functional capacity of the pancreas, and in the majority of instances it has been found that the administration of oil on the empty stomach sufficed to cause a regurgitation of the duodenal contents into the stomach.

In nine observations in which we administered 100 cubic centimetres of oil on the empty stomach, in four only where the oil was withdrawn after the lapse of half an hour was bile pigment present in the mixture, which was acid in reaction, devoid of HCl in a free state, contained pepsin, and in one case gave a very slight tryptic digestion. In the other five cases the oil was allowed to remain in the stomach for an hour, and in four of these neither bile pigment nor trypsin was present in the mixture, which contained a small amount of free HCl and pepsin, and in one there was a faint greenish tinge of bile pigment. But, as already mentioned, in no instance was the presence of bile pigments or trypsin noted in the stomach contents after an oil breakfast.

Whatever the explanation may be, it remains that the neutral liquid fats administered before food lead to a diminution of the subsequent acidity of the stomach contents, the more so the greater the tendency of the secretory activity of the stomach to exceed the normal. Clinically, our experience of the administration of fats, such as cream, butter, almond oil, in conditions in which hyperacidity of the stomach contents has been found to exist, has shown this action of fats to be associated with a very definite amelioration of the subjective manifestations of the condition. In simple forms of hyperacidity depending on slight degrees of digestive hypersecretion (the so-called hyperchlorhydria of Riegel) the addition of cream and butter in abundance to the diet, with a diminution of the starches, will often suffice to remove the subjective manifestations. It is only in the more severe types, and particularly the severe degrees of digestive or continuous hypersecretion so commonly associated with chronic ulcer about the pylorus or duodenum, in which heart-burn, acid pyrosis, the sudden gnawing pain in the epigastrium ascribed to pyloric spasm, and the vomiting of acid fluid, that the administration of almond oil is undertaken, and then in doses of 1 ounce first thing in the morning and repeated before subsequent meals if necessary. This method has proved of value in not only alleviating the symptoms which follow the digestion of food in the stomach, but also in contributing very considerably to the nutrition of the patient, and is certainly preferable to the sole use of alkalies for the purpose of neutralising the hyperacid stomach contents and so obtaining relief from the symptoms. In no case have we found that oil so administered has been badly tolerated or in any way proved objectionable.

*Bibliography.*—Ageron: Münchener Medicinische Wochenschrift, 1902, No. 30. Akimow-Peretz: Wratsch, 1898, No. 4. Backmann: Zeitschrift für Klinische Medicin, 1900, vol. xl., p. 224. Boldyreff: Archiv für die gesammte Physiologie, 1908, vol. cxxi., p. 13. Bloch: Archiv für die Verdauungskrankheiten, 1907, vol. xiii., p. 606. Blum: Berliner Klinische Wochenschrift, 1905, Nos. 20 and 21. Cohnheim: Zeitschrift für Klinische Medicin, 1904, vol. lii., p. 110. Ewald and Boas: Virchow's Archiv, 1886, vol. civ., p. 271. Faubel and Volhard: Münchener Medicinische Wochenschrift, 1907, p. 403. Fischl: Prager Medicinische Wochenschrift, 1903, Nos. 10 and 12. Strauss and Aldor: Zeitschrift für Diätetische und Physische Therapie, 1898, vol. i., p. 117. Walko: Zentralblatt für die innere Medicin, 1902, No. 45.

## A FURTHER NOTE UPON THE RELATIONSHIP BETWEEN AVIAN AND HUMAN TUBERCULOSIS.

BY S. G. SHATTOCK, F.R.C.S. ENG.,
AND
LEONARD S. DUDGEON, F.R.C.P. LOND.
(*From the Pathological Laboratories of St. Thomas's Hospital.*)

IN the Proceedings of the Royal Society of Medicine, Pathological Section, December, 1907, we published, in conjunction with Dr. C. G. Seligmann and Dr. P. N. Panton, the results of an investigation upon the above subject. Our conclusions as therein stated were as follows.

The human tubercle bacillus is pathogenic to the pigeon in a very limited degree only. It sets up no disease of the intestine or of the abdominal viscera when introduced (in sputum) with food into the alimentary tract, even for prolonged periods (six months) and in excessive quantities. It sets up a local or a local and glandular disease only, in the pigeon, when injected (in sputum) into the muscles or subcutaneous tissues. It sets up a local or a local and glandular disease only in the pigeon when injected into the muscles or subcutaneous tissues from the organs of guinea-pigs which have been infected by inoculation with human sputum. The avian tubercle bacillus as tested from various kinds of birds is pathogenic to the guinea-pig in a very limited degree. The human bacillus has not, so far, in our hands, proved convertible into the avian by inoculation into the bird—i.e., the bacilli have not proved identical.

In the present note we append the results of a series of passage experiments carried out with the object of ascertaining whether a repeated transmission of the avian bacillus through the guinea-pig would bring about any exaltation of its virulence, or whether a repeated transmission of the human bacillus through the pigeon would produce a similar pathogenic change.

In neither set of experiments has any increase whatever of virulence been induced. The avian bacillus when passed through a series of guinea-pigs produces only a local lesion and does not acquire any of the more virulent qualities which distinguish the human bacillus when injected into this animal. The human bacillus when passed through a series of pigeons continues to set up no more than a purely local lesion.

At the Ninth International Veterinary Congress held at The Hague (Sept. 14th–19th, 1909) one of the subjects discussed was the transmission of avian tuberculosis to mammals. Dr. Mohler[1] insists, as we have already done,[2] upon the urgency of studying the relationship between the avian and other varieties of tuberculosis, by reason of the prevalence of the avian disease and the general consumption of birds as articles of food. It is to fowl tuberculosis that Dr. Mohler has especially directed his attention. The positive results arrived at by the feeding of fowls with the tuberculous organs of fowls are given, and the discovery of large numbers of tubercle bacilli in the fæces suggests, it is pointed out, the ease with which the disease may be spread through the flock. In our paper we recorded both the impossibility of inducing visceral tuberculosis in pigeons by means of injections of the human tubercle bacillus in sputum and the impossibility of setting up any intestinal or other disease by prolonged feeding with tuberculous sputum; we recorded, however, the converse results of feeding pigeons with the tuberculous viscera of other birds (phea-ants, &c.) dying from tuberculosis.

The fundamental question as to the relationship between *human* and *avian* tuberculosis is not touched by Dr. Mohler's observations. We cannot regard all the forms of mammalian tuberculosis (including, i.e., the human) as being identical, without proof. Dr. Mohler was able to infect the pig with tuberculosis from the carcasses of tuberculous chickens. But what disease the tuoerculosis so induced in the pig would set up in man is not determinable by such an experiment.

That the avian bacillus is not physiologically identical with the human Dr. Mohler's observations prove, and so confirm those recorded by other observers, including ourselves. With the eggs laid by tuberculous fowls he inoculated guinea-pigs, using the white upon some and the yelk upon others. In none of the animals did more than a local lesion result. The spleen in one was enlarged, but though bacilli were demonstrated by smears, no lesions were visible. Neither in a second guinea-pig were tuberculous foci found, but the spleen and mesenteric glands were proved to contain bacilli by sub-inoculations of other guinea-pigs, which presented well-marked lesions (not stated to be visceral). From these, typical avian cultures were raised upon egg media. The guinea-pigs inoculated from the yelk developed no disease whatever.

These observations confirm those already made by ourselves[3] upon guinea-pigs, using the viscera of tuberculous birds. What Dr. Mohler has failed to show is that the avian tubercle bacillus sets up in the guinea-pig the lesions that are produced by the human organism, and, this being so, the onus of proving the identity of the two rests upon those who assert it.

*The Passage of the Avian Tubercle Bacillus from Guinea-pig to Guinea-pig in order to Ascertain whether it will Acquire a Higher Virulence towards the Guinea-pig.*

*Summary.*—This series of passage experiments of the avian bacillus (derived from the pheasant) to the guinea-pig was commenced on Nov. 25th, 1907, and terminated on July 24th, 1908. The avian bacillus (in a salt suspension from the tuberculous spleen and liver of a pheasant dying from the disease) was injected into a guinea-pig on Nov. 25th. From this guinea-pig the bacillus was carried (by making a suspension of the resulting local lesion in sterilised salt solution) into a succession of others, the transferences being made on Dec. 14th, 1907, and Jan. 13th, Feb. 18th, April 15th, May 15th, June 26th, and July 24th, 1908. In no animal did any more than a local lesion arise, accompanied in some cases with an insignificant involvement of the adjacent lymphatic glands. In the two guinea-pigs last inoculated no disease whatever ensued. As tubercle bacilli were present in the pus used for this concluding inoculation the numbers introduced must have been too few to set up even a local lesion. It will be seen, therefore, that no increase of virulence was brought about in the avian tubercle bacillus (derived directly from the diseased organs from a fatal case of avian tuberculosis) as tested by repeated passage through the guinea-pig. The bacillus continued to produce only a local lesion, and acquired none of the pathogenic characters of the human bacillus from its prolonged growth in the mammalian tissues and fluids of the guinea-pig. It did not in the least degree acquire any virulence indicative of a transformation into the human micro-organism.

*The Passage of the Human Tubercle Bacillus from Pigeon to Pigeon in order to Ascertain whether it will Acquire a Higher Virulence towards the Bird.*

In order to free the sputum of other micro-organisms a guinea-pig was inoculated with human sputum (which was full of bacilli) on Nov. 27th, 1907. The animal was killed on Dec. 14th, 1907, and presented the typical lesions of tuberculosis at the site of inoculation, in the inguinal and lumbar lymphatic glands, and the spleen. Two pigeons were inoculated on Dec. 14th, 1907, with a salt suspension of the inguinal and lumbar glands and the spleen, rubbed in a sterilised mortar, the injections being made into the pectoral muscle at the base of the wing. The birds were killed (35 days after inoculation). The first showed no local lesion; the spleen was normal on the surface and in section. In the case of the second bird there was a minute yellow focus at the surface of the pectoral muscle, too small to make further use of. The spleen was normal. On Sept. 23rd, 1907, two pigeons were injected with 2 cubic centimetres of a salt emulsion of human tuberculous sputum which contained large numbers of bacilli into the pectoral muscle at the base of the wing of each bird. On Oct. 10th the birds were killed. In each there was a firm, dry, brownish encapsulated focus of necrotic muscular substance. The lesions, which were of elongated form, were cut out, minced in a sterilised mortar, and rubbed up in sterilised salt solution. This was injected into two birds. On Oct. 24th these birds were killed and in each there was a narrow insignificant brownish necrotic focus in the pectoral muscle less than 1 centimetre in length. A portion of one was used to smear two slides; these showed the presence of tubercle bacilli, necrotic muscle fibre, and a notable number of cells. The rest of the lesions were made into a suspension as before and the whole injected into the base of the wing of another pigeon. On Nov. 7th this bird was killed, and at the site of the injection a necrotic lesion was found too insignificant for further use.

It was clear that the human tubercle bacillus produces in the pigeon only a local lesion and evinces no tendency to increase in virulence on four successive passages through the bird.

*The Inoculation of Fowls with Human Tuberculous Sputum.*

In the pigeon the intramuscular injection of human tuberculous sputum is followed only by a local lesion which eventually becomes obsolete, and never by visceral disease; nor can the pigeon be infected by means of human sputum administered by the mouth for long intervals. That what is true for the pigeon might not be true for the fowl is an obvious criticism that can only be met by experimenting with the latter bird. Yet even Nocard, who was an advocate for the identity of human and avian tuberculosis, confesses that he was unable to infect fowls by the administration of human sputum.

In the following experiments sputum was injected intramuscularly into two fowls, as it was in the case of the pigeons. The sputum used was in all cases found to contain large numbers of tubercle bacilli. An emulsion of human tuberculous sputum was made in sterilised salt solution, and with this two Buff Orpingtons were injected on Nov. 25th, 1908, into the pectoral muscle. On Dec. 18th, 1908, neither

[1] Report in THE LANCET, Oct. 2nd, 1909, p. 1031.
[2] Loc. cit.
[3] Proceedings of the Royal Society of Medicine, Pathological Section, December, 1907.

bird presented any local lesion, and into one 6 cubic centimetres of sputum emulsion were injected into the pectoral muscle as before, and on March 24th, 1909, a third injection was made into the same bird, 6 cubic centimetres being injected into the opposite pectoral muscle. On April 26th, 1909, the bird which had received three injections was killed. The abdomen was opened and the spleen removed with complete aseptic precautions. It was found to be free from disease on naked-eye examination. It was rubbed in a mortar with a small amount of boiled salt solution and injected into the subcutaneous tissue of a guinea-pig's leg. The examination of the body of the fowl was then completed. None of the viscera, abdominal or thoracic, presented any trace of disease. In each pectoral muscle at the site of injection there was an extensive area in which the muscular substance was pale and indurated. The altered tissue was recognisable, on reflecting the skin, by its different colour. There was no swelling or unnatural vascularity about it, and the tissue was so firm and solid that it could hardly be parted into bundles by teasing. The change did not extend to the deepest side of the muscle. In the midst of this firm tissue were scattered a few lines of soft yellowish material, smears made from which (in both muscles) showed large numbers of tubercle bacilli and giant cells.

The microscopic sections, made so as to include the periphery of the condensed tissue and the normal muscle beyond, show that the pale indurated tissue is not necrotic, but the seat of a diffuse interstitial inflammation. The muscle fibres, which have not lost their striation, are separated by extensive groups of endothelial cells and lymphocytes. The cells have almost everywhere a definite arrangement in circular or oval groups, and many of the groups contain one or many giant cells. The nuclei of the latter are devoid of a peripheral disposition. The whole picture reproduces that met with in the case of the pigeon when experimentally injected with avian tuberculosis, but with the marked difference that whilst the avian bacilli were demonstrable with the greatest ease in the second case none of the human could be shown in the first.

There is no necrosis of the new formation. The lesion ends somewhat abruptly, and is succeeded by normal muscle, but there is no limiting zone of intervening fibrous tissue. A certain amount of fibrosis accompanies the tuberculous lesion, the tubercles or giant-celled systems in places lying in the midst of fibrous tissue.

The subsequent history of the guinea-pig inoculated from the apparently normal spleen of this bird was as follows. It was killed about eight weeks after inoculation and was found to be free from tuberculous disease. The second fowl, which had received only one injection of human tuberculous sputum (viz., on Nov. 25th, 1908), was killed June 25th, 1909. It was in perfect general condition. In the substance of the right pectoral muscle there was a narrow elongated focus of fibrous tissue, in the centre of which, at one spot, there was a softer, whitish material. The lesion was rubbed up with sterilised salt solution and injected into a guinea-pig. The spleen of the fowl (which to the naked eye, like all the other viscera, was normal) was rubbed up in salt solution, and the whole injected into the thigh of a guinea-pig. The first guinea-pig died July 13th; the necropsy showed no trace of disease at the site of the injection or elsewhere. The second animal was killed August 4th. The necropsy was absolutely negative.

### *The Inoculation and Feeding of White Rats with the Avian Tubercle Bacillus.*

The wild rat occasionally suffers from a disease characterised by the formation of multiple granulomata of the skin and viscera, in which dense clusters of acid-fast bacilli are present. In this country the disease has been fully investigated by Dr. George Dean,[4] although observations upon it had been previously published by Stepansky (1903) while working at plague in Odessa, and whose results were confirmed by Rabinowitch in Berlin. Dr. Dean was able to transmit the disease to black-and-white rats by subcutaneous and intraperitoneal injection of suspensions of the bacilli from the infected tissues, but was unsuccessful in his attempts to cultivate the micro-organism. In the latter particular, and in the marked density of the bacilli in the lesions, this disease recalls human leprosy; the closeness of the similarity is manifested, moreover, by its inoculability only to other animals of the same species—i.e., to rats; for attempts to infect guinea-pigs, rabbits, mice, and macacus rhesus failed; and in man leprosy is transmitted only from one individual to another. After subcutaneous inoculation a local lesion in several instances ensued. The lesion consisted of a nodule containing a semi-caseous substance resembling that present in the skin of the naturally infected animals. The acid-fast bacilli are very numerous in these local lesions. The lymphatic glands in such cases, even at a distance from the lesion, were sometimes invaded by the bacilli. The most marked lesions, however, resulted from intraperitoneal injections.

Amongst tuberculous diseases the density of the bacilli is matched in the avian variety. In the various forms of avian tuberculosis the acid-fast bacilli are as thickly clustered as they are in this leproid disease of the rat. It was with the object of ascertaining whether the two conditions were the same that we injected a series of white rats with a pure culture of the avian bacillus, and also with the tuberculous spleen and liver of a pheasant dying from typical tuberculosis.

### *The Inoculation of White Rats with a Pure Culture of the Avian Tubercle Bacillus.*

Five white rats were injected into the muscles at the root of the tail with a pure culture of the avian bacillus suspended in sterilised salt solution.[5]

*Rat 1.*—A rat was killed 11 days after inoculation. At the site of injection there was a lesion of about the size of a small pea, with a somewhat yellow centre. Smears made from the local lesion showed large numbers of acid-fast bacilli. The abdominal viscera presented no marks of disease. The lumbar gland of one side was slightly enlarged; microscopic sections of this showed foci of endothelial proliferation and giant cells; the giant cells held considerable numbers of tubercle bacilli.

*Rat 2.*—A rat was killed 18 days after inoculation. At the root of the tail there was an intramuscular lesion, as in the previous experiment, but less extensive. Smears from this showed considerable numbers of tubercle bacilli. There was no disease of the lumbar glands or viscera.

*Rat 3.*—A rat was killed 100 days after inoculation. There was no local lesion at the site of inoculation and no disease of the lumbar glands or viscera.

*Rats 4 and 5.*—The remaining rats were killed 127 days (18 weeks) after inoculation. In one there was a small encapsulated intramuscular caseous mass at the right side of the root of the tail; smears from this showed considerable numbers of tubercle bacilli. The viscera presented no signs of disease. The second animal presented no local and no visceral lesions.

### *The Inoculation of White Rats with the Tuberculous Spleen and Liver of a Pheasant.*

In the two following experiments a salt suspension of the tuberculous spleen and liver of a pheasant dying from tuberculosis was used as an injection, the inoculation being made into the root of the tail.

*Rat 1.*—One of the rats was killed 49 days (7 weeks) after inoculation. There was no local lesion and no disease of the viscera. The lumbar gland of the left side was enlarged, but without caseation; smears from the cut surface showed a very few bacilli.

*Rat 2.*—The second rat was killed 89 days (nearly 13 weeks) after inoculation. There was a small localised abscess, not caseous, in the muscles at the base of the tail. A smear from this showed numbers of polymorphonuclear leucocytes and giant cells, each kind of cell being full of tubercle bacilli. The lumbar glands were not enlarged; there was no disease of the viscera.

### *The Feeding of White Rats with the Diseased Organs of Tuberculous Birds.*

Three white rats were fed with the tuberculous spleens and liver of three pheasants (received within a few days of one another) on Nov. 16th, 18th, 20th, 25th, and 26th, 1908. They consumed large quantities of the material with avidity.

*Rat 1.*—A rat was killed 58 days (8 weeks) after feeding. The intestine was slit up, washed, and minutely examined

[4] Journal of Hygiene, vol. v., No. 1, January, 1905.

[5] The bacillus was from a subculture carried on from a strain kindly supplied to us by Professor Delépine, who raised it from a tuberculous fowl.

There was no trace of tuberculous disease within the intestine or on the peritoneal aspect. The viscera were normal.

*Rat 2.*—A rat was killed 98 days (14 weeks) after feeding. The intestine and stomach were slit up, washed, and carefully examined. There was no trace of disease in the mucosa or peritoneal coat and the viscera were normal.

*Rat 3.*—A rat was killed 125 days (18 weeks) after feeding. A close examination of the intestine revealed no disease of the mucosa or peritoneum. The viscera were normal.

*Conclusion.*

These various results show that the white rat is immune to the avian tubercle bacillus, whether the bacillus is experimentally injected (in pure culture or directly from the diseased viscera) or whether it is introduced in large quantities by the mouth.

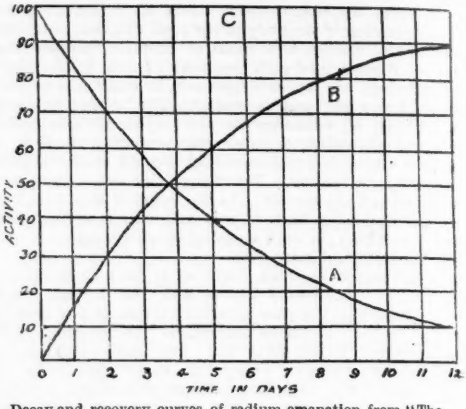
## ON THE USE OF RADIUM FOR LOCAL APPLICATION WITHIN THE BODY.

BY ALFRED C. JORDAN, M.D. CANTAB.,
MEDICAL RADIOGRAPHER, GUY'S HOSPITAL, AND ROYAL HOSPITAL FOR DISEASES OF THE CHEST.

THE supply of radium is at present so small that the limits of its therapeutic usefulness have not yet been fully determined. Hitherto radium has usually been employed in the form of crystals of radium bromide. These crystals are contained either in a sealed glass tube or in a button with a covering of thin glass, aluminium, or mica. More recently they have been spread in a thin layer upon a flat surface and covered with a layer of varnish. Such buttons and spread preparations are suitable for application to the surface of the body.

Of the three types of radiation given off by radium (the alpha, beta, and gamma radiation) the view commonly accepted is that the gamma rays have a selective action, destroying diseased cells while leaving the normal cells intact, whereas the alpha and the soft beta rays are said to have a destructive action, destroying not only the diseased cells but also the normal cells. Much further investigation is required before this point can be finally settled. In the meantime it seems wise to accept the statement provisionally and to use means to prevent the alpha and soft beta rays from reaching the body. For this purpose a filter consisting of 1 millimetre thickness of lead is suitable.

The gamma radiation appears to consist of ether rays of the same kind as very penetrating X rays, and there will only be an advantage in applying radium as compared with the application of X rays if it be shown that the gamma rays have a more definite selective action than have the X rays. In the interior of the body—as, for instance, in the mouth, throat, œsophagus, rectum, and uterus—it is not possible to apply the X rays directly in most cases. In such cases there appears to be a very real indication for the use of radium, and the method to be described was devised for the purpose of carrying out this indication in practice. For this purpose I have been enabled to obtain radium emanation in sealed glass tubes. The emanation is obtained from a solution of 400 milligrammes of radium bromide. The solution is kept in a flask to which is attached a Töpler air-pump. The air in the flask is kept partially exhausted, and whenever any radium is required the pump is worked until at the low pressure the solution commences to boil. Radium emanation is carried with the water vapour and residual traces of air into the tube leading out of the flask; this may then be collected in a small length of glass tubing inverted over a cup of mercury, and the tubing sealed up in the flame. Thus the original stock solution is never touched. The sealed glass tube containing the emanation behaves physically exactly like a similar tube containing crystals of radium bromide. All the forms of radiation are given off from it in exactly the same way; but there exists a great difference—viz., that the radio-activity of the emanation tube immediately begins to decay according to an exponential law as expressed in the accompanying curve (see figure), so that at the end of about four days it has lost half its radio-activity. The radio-active value of the emanation tube is determined when it is first sealed by means of an electroscope, measuring it by its gamma radiation against a standard preparation of radium bromide. By means of the curve it is then a simple matter to determine the exact strength of the emanation tube at any subsequent date. While the emanation in the sealed tube is decaying the original radium (which had lost an equivalent amount of radio-activity) is recovering. With a stock solution of 400 milligrammes of radium bromide it is possible to withdraw the equivalent of about 40 milligrammes of emanation daily without




Decay and recovery curves of radium emanation from "The Radioactive Substances" (W. Makower). International Scientific Series, vol. xcii., p. 149.

diminishing the value of the solution. If more than 40 milligrammes be removed daily then the stock solution loses strength, and the withdrawal of emanation must be discontinued for a few days to enable it to regain its full value.

I have had lead "compo" tubing made of suitable sizes, the wall of the metal being 1 millimetre in thickness in every case. Every glass tube of emanation is enclosed in a length of this tubing, the ends of the metal being closed down over the glass, rounded off, and welded up. All the soft beta rays are absorbed in this metal (the alpha rays are not able to penetrate the glass), while some of the hard beta rays and practically all the gamma rays are able to escape. The metal tubing is enclosed in a tube of rubber, the ends of which are closed by a silk ligature, a considerable length of silk being left attached to one end. The tube is then ready for insertion into the rectum or cervix uteri in a case of recurrent or inoperable carcinoma. A 10 milligramme tube may be left *in situ* indefinitely (say all night and through the greater part of the day) without fear of producing any destructive action on the normal tissues. In the case of a growth high up in the rectum or in the sigmoid flexure—i.e., beyond the reach of the finger—the "compo" tube containing the emanation tube may be placed within a long rectal tube of rubber, and in this way may be passed up to the required spot. In the case of the œsophagus the compo-tubing containing the emanation is placed in a Symonds's tube or in a stomach tube, and the tubing is passed down to the required place. In this case the tube must be removed for the purpose of administering food to the patient. It is easy to make sure by an X ray examination that the tube lies at the required place.

It is true a glass tube containing crystals of radium bromide might be used in a similar manner, but there is a very obvious advantage in using sealed tubes of emanation, for there is considerable risk of losing a valuable tube of radium crystals if it be left in the rectum, while the loss of a tube of emanation involves nothing more serious than the loss of a fortnight's treatment. A further advantage is due to the fact that the whole length of the emanation tube is uniformly radio active, while the crystals fall to one end of the tube. The cases in which I have applied this method have included recurrent carcinoma of the rectum, cervix uteri, œsophagus, and floor of the mouth. Although it is too early to give detailed results I may say that the results so far obtained are promising. It is scarcely necessary to point out that the use of sealed glass tubes containing emanation is not in any sense comparable to the use of emanation by injection

into the blood-stream or by inhalation, both of which methods have been tried. The method I have described is exactly the same in its nature as the use of crystals of radium bromide in sealed tubes, while my method is far more convenient and does not involve the risk of losing valuable tubes of radium salts.

Considering the enormous energy given out by radium, and considering that the alpha rays possess about 100 times as much energy as the beta and gamma rays together, it is obviously a matter of great importance to decide whether it is not possible to make use of the alpha radiation in treatment. For this purpose the suggestion of Makower should be carried out. He points out[1] that "we have only to expose a negatively charged conductor, for example a wire, to the emanation in order to concentrate the maximum possible quantity of active deposit on its surface. It is thus possible, without any difficulty, to obtain surfaces whose activity per unit area is enormously greater than could be obtained by any other means." Needles thus rendered active could be inserted into the interior of malignant growths where they would be able to exert the whole of their energy. The activity of these needles decays very much more rapidly than is the case with the emanation; they decay to half value in about 20 minutes. At the end of this time they can be recharged and reinserted into another part of the growth. Electrodes of various forms could be charged and held in contact with localised growths—e.g., in the larynx—for a suitable time, which must be determined by trial. I have not yet attempted to apply this method, which is necessarily experimental and requires the resources of a large institution.

Weymouth-street, W.

[1] The Radio-active Substances, W. Makower, International Scientific Series, vol. xcii., p. 176.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### NOTE ON A CASE OF ENURESIS WITH HYPERMETROPIA.

BY ALBERT H. FARDON, M.D. CANTAB., M.R.C.S. ENG.

ENURESIS in children has had many and varied pathological conditions put forward as a causal factor, but hypermetropia, as far as I know, has not yet ranked amongst them. The following case seemed to indicate that possibly it should do so, and may be of interest for that reason.

The patient was a girl, aged 7 years, who attended my outpatient department for lack of control over the bladder. Her mother stated that the child had been in the habit of wetting herself for more than a year, and every day she returned from school wet through. The condition was first noticed soon after she began to attend school. The trouble occurred only at day-time, and she never wetted the bed. She had gradually been getting worse, and at the time she came to me she would pass urine six or eight times a day—in fact, she did so whilst I was talking to her. She was always conscious at the time and was a perfectly intelligent child, and said that she was quite unable to prevent it although she tried hard. She had no local condition to explain the trouble, and the urine was quite normal. She had no suspicion of adenoids and had not suffered from worms. She was the younger of two children, the elder girl being quite healthy. One infant had died from "convulsions," but apart from that there was no history of epilepsy. She never complained of pain in passing urine, and was not examined for a calculus. The patient was treated in the ordinary way with belladonna for some weeks, with no improvement. Bromides were also given a trial. The fact that the enuresis was diurnal only, and also that the trouble started soon after she commenced her schooling, suggested to me that her eyes might be the source of the trouble, and I accordingly performed a retinoscopy under atropine and found that she was hypermetropic to the extent of over 5 D. She was ordered glasses for constant wear and no further medication. In 10 days the mother said that the child was much better, and a week later she had been four complete days without wetting herself. She has been wearing her glasses for six weeks at the time of writing and is entirely free from her trouble.

County Hospital, Guildford.

### AN UNUSUAL CASE OF HÆMO-PERICARDIUM.

BY A. J. WILLIAMSON, M.A., M.B., CH.B. ABERD.,
HOUSE SURGEON TO THE LIVERPOOL STANLEY HOSPITAL.

THE body of a man, aged 35 years, was brought to the Liverpool Stanley Hospital on the morning of Oct. 20th, 1909. He was a labourer, and according to the account received had fallen from a box a couple of feet high to the ground, where he continued to breathe in a stertorous manner for about 20 minutes when death supervened.

At the necropsy I found on opening the chest that the pericardium was greatly distended and that it projected well over to the right side of the sternum. It was found to contain about 18 ounces of well-formed blood-clot, and at the first glance it was rather difficult to locate the source of this effusion. The pericardium had a healthy appearance and there was no visible rupture of the heart. The organ itself was in a condition of well-marked fatty degeneration, the muscle being pale, flabby, and atonic. Beyond slight atheroma at the mouths of the coronary arteries these seemed to be in good condition. But when the organ was washed, in addition to two well-marked "milk spots," there were seen on its surface several small ecchymoses. These ecchymoses were situated on the right ventricle, and to a less extent on the left ventricle, and when sponged clean blood was seen flowing from the mouths of minute vessels in their centres. At the aortic valves some thickening was noted and the aorta was enlarged and atheromatous. There was no evidence of aneurysm. Congestion was present in the abdominal organs, which were in general very healthy. The liver showed signs of commencing fatty degeneration, and the stomach was large and contained the partly digested residue of a meal. The brain was perfectly healthy.

Death seems to have been caused by sudden stoppage of the heart from increasing pressure within the pericardium, and the causative effusion followed the rupture of several small cardiac veins which were in a condition of congestion from a feebly acting left ventricle.

Liverpool.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### MEDICAL SECTION.

*The Rôle of Fats in the Treatment of Disorders of the Stomach.*

A MEETING of this section was held on Nov. 23rd, Dr. J MITCHELL BRUCE being in the chair.

Dr. F. CRAVEN MOORE and Dr. R. L. FERGUSON contributed a communication on the Rôle of Fats in the Treatment of Disorders of the Stomach, which was read by Dr. Craven Moore, and which is published in full on p. 1737.

Dr. A. F. HERTZ said that, in his experience, the administration of olive oil before meals was not sufficient to relieve symptoms. He found that the best results were obtained by placing patients on an exclusive diet of olive oil.

Dr. R. SAUNDBY did not consider that the use of olive oil was necessary in order to relieve pain. He had observed that when these patients were put to bed pain disappeared. He maintained that in cases of hyperacidity a useful treatment was half a pint of infusion of hops taken before going to bed.

Dr. R. HUTCHISON pointed out that many patients with hyperacidity had a repugnance to taking oil; he had known patients who preferred to suffer the pain of the condition rather than take oil. He suggested that the treatment by oil might be limited in its application.

Dr. FERGUSON and Dr. MOORE then replied and the meeting ended.

# WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

*The Laboratory Diagnosis of Syphilis.*

A MEETING of this society was held on Dec. 3rd, Dr. NEVILLE T. WOOD, the President, being in the chair.

Mr. HUGH W. BAYLY read a paper on "Laboratory Methods for the Diagnosis of Syphilis." In Part I., Serum Diagnosis, he discussed the technique and *rationale* of the Wassermann and Bordet-Gengou reactions and described the terms commonly employed. Part II. Micro-biology.—The ultra-microscope, or reflecting immersion condenser, and the technique for its use were described. It was stated that the treponema pallidum can be demonstrated in practically every early untreated chancre and is also found in papular rash and mucous plaques. It appears as an extremely fine spiral from 5–25 $\mu$ long, with very regular and closely set spirals. Number of spirals range from 5–25. Distilled water is the best medium in which to examine them. Giant forms may be seen when examined in serum, and in this medium the movements are more active and last longer than in water. The movements consist of bending, snake-like movements, local wave contraction. Viscosity develops as organism becomes less motile. Agglutination occurs in serum only. The older the infection the greater the tendency to clump (auto-agglutination). Diagrams were shown for differential diagnosis of "spirochæta refringens," "spirochæta balanitidis," &c. Part III. Inoculation experiments.—Path of infection and mode of entrance discussed; small superficial erosions the most dangerous. Incubation: The more resistant the animal the shorter the incubation period. In apes positive inoculation obtained with material from the bone-marrow, spleen, and, much less frequently, testicle and lymphatic glands. In man: Positive inoculation obtained from well-marked secondary syphilis. *Virus:* Attenuated by passage through apes. Prophylactic measures discussed. Conclusions: (1) That syphilitic infection is easily preventable; (2) that such infection can be diagnosed with certainty on the first appearance of a primary sore by means of the microscope; (3) that the earlier that the treatment is begun the better for the patient; (4) that a positive Wassermann, in the absence of a few diseases, is pathognomonic of syphilis; (5) that the Wassermann reaction forms a very useful guide to treatment, and that antisyphilitic treatment should be continued till a succession of negative results are obtained; (6) that the blood should be examined every six months for a couple of years at least after the first negative reaction is recorded.

Colonel F. J. LAMBKIN, R.A.M.C., said that for a year all the syphilitic cases admitted in the Rochester Row Hospital had been subjected to Wassermann's reaction. He quite agreed as to the value both for the treatment and diagnosis and quoted cases. He mentioned that the cases treated with arylarsenates had shown no toxic symptoms.

Captain HARRISON, R.A.M.C., had carried out the test in Rochester Row Hospital and confirmed all that Colonel Lambkin had said. He hoped that much might be learnt and done for the treatment, &c., of syphilis by the use of the Wassermann test in the army on account of the efficient system of supervision which is required in these cases. He thought it advisable in the case of negative reaction to repeat the test with untreated patients' serum.

Mr. J. ERNEST LANE said that he agreed with the value of Wassermann's test. It would allow early treatment and at the same time avoid the treatment of non-syphilitics with prolonged courses of mercury, which had undoubtedly occurred. He spoke as to the toxic effects of the arylarsenates.

Mr. C. GIBBS agreed with the great advance in syphilology due to Wassermann's reaction. He also spoke on the arylarsenate question.

Mr. REGINALD H. HAYES hoped that the test would settle the relative values of the modes of administering mercury.

Mr. J. E. R. MCDONAGH said that there was a tendency for the test to be negative in undoubted syphilitic cases whilst taking mercury. He pointed out the great use of the test in women who aborted. He had found a tendency for the test to remain permanently positive in the cases of children suffering from congenital syphilis, however long they were treated with mercury. He mentioned some causes of failure of the test and how to remedy them.

Dr. F. E. BATTEN spoke and Mr. BAYLY replied.

# EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

*Exhibition of Cases.—Therapeutics of Radium.—Dyspepsia and Early Tuberculosis in Children.*

A MEETING of this society was held on Dec. 1st, Dr. BYROM BRAMWELL, the President, being in the chair.

The PRESIDENT exhibited a man, unmarried, aged 32 years, who suffered from Preataxic Tabes. The case was both of theoretical and practical interest as these tabetic attacks of gastric and intestinal crises were often mistaken in practice for other diseases. The man had been operated on for appendicitis two years ago, and since then he affirmed he had been subject to very severe attacks of abdominal pain. On examination nothing abnormal could be made out in the abdomen and it was at first thought that the attacks were due to post-operative adhesions. On further inquiry, however, it was discovered that the man had suffered from similar attacks for six months previous to his operation. He had never had lightning pains or ataxia, but his knee and Achilles jerks were completely absent; the Argyll-Robertson phenomenon was present. His blood showed marked lymphocytosis (400 in each field) and the Wassermann test was present. He admitted having contracted syphilis nine years ago. The attacks, which were very severe, occurred about once in six weeks and were accompanied by tenesmus. He was being treated by X rays and the patient felt himself to be better.

Mr. A. A. SCOT SKIRVING showed a man who illustrated certain Defects of Memory after operation for Middle Meningeal Hæmorrhage. The patient fell downstairs five months ago and was unconscious when admitted to the infirmary. On examination there were no symptoms of compression, the pupils were equal, and paralysis was absent. One hour later, however, it was found that there was right-sided paralysis and the left pupil was double the size of the right. Hæmorrhage from the left middle meningeal artery was diagnosed. At the operation a fairly large clot was removed. By next day the paralysis had gone, but the patient remained perfectly unconscious for nearly three weeks. He then began to recover, but for many months subsequently marked weakness in the right arm and hand remained with slurring of the speech, especially in words with the letter "s," and loss of memory. He was formerly a clerk, but could not perform simple sums for nearly 18 months after his accident. At present he has greatly improved and his mental faculties and speech were returning.

Dr. FRANCIS D. BOYD exhibited a man to illustrate the benefit of a Salt-free Diet in certain forms of Œdema. The patient suffered from a syphilitic ulcer on the forehead. When admitted to the ward he was perfectly waterlogged and the œdema extended up to the shoulder-blades. The excretion of urine was very scanty, and especially the chloride excretion. He was put on a varied diet (meat, eggs, &c.) but one free from sodium chloride, and immediately there was an enormous diuresis with great loss in weight. He was discharged almost well, but on resuming his ordinary diet his diseased condition soon returned. On placing him again on salt-free food he rapidly improved and was at present perfectly well.

Professor H. ALEXIS THOMSON exhibited a boy, aged 11 years, in whom, on account of a Periosteal Sarcoma of the Right Humerus, the middle third of the shaft was resected and a portion of the fibula inserted in its place. Formerly the only treatment for such a disease was amputation, but the history almost always was that the patient died from recurrence. At first excision was only employed for the less malignant forms, but it seemed only right to give the boy the chance of recovery in this case. The operation was performed three months ago. The tumour, with 3 inches of bone, was resected, and those parts of the muscle which were infiltrated were also removed. Unfortunately the musculo-spiral nerve was sacrificed. About 5 inches of the boy's left fibula, together with its periosteum, was excised, and the ends having been

sharpened they were jammed into the cut ends of the humerus. The wounds were quite healed and there seemed to be firm union between the bones. The cut ends of the musculo-spiral nerve were spliced into the musculo-cutaneous nerve and restoration of function was hoped for. Treatment by X rays was being carried out in order to prevent recurrence of the growth if possible.

Dr. JAMES RITCHIE, jun., gave a demonstration of Wassermann's reaction.

Dr. DAWSON TURNER read a paper on the Use and Effects of Radium, and illustrated it by patients and lantern slides. The paper will be published in a future number of THE LANCET.

Dr. A. DINGWALL FORDYCE read a paper on the Differential Diagnosis and Treatment of a common form of Dyspepsia and of Early Tuberculous Infection in Children, in the course of which he said: The introduction within recent years of new methods and new tests has conduced to greater precision in diagnosis, and, through the recognition and differentiation of various conditions in their early stages, has been of value in rendering possible early active treatment. There is considerable difficulty in certain cases in children in ascertaining whether the symptom-complex is due to a chronic digestive or metabolic disorder, or whether a chronic infective condition—e.g., tubercle—lies at the root of the evil. The cases here considered are marked by vagueness in personal history and in symptoms, all have very chronic symptoms, mostly gastro-intestinal, there are no definite abnormal physical signs, and the children are going about, are comparatively well, and have approximately normal temperatures. Accurate and prompt diagnosis is essential to permit of active treatment. The special points in the diagnosis are: 1. The capacity of digesting fat. This capacity is considerable in cases of early tuberculous infection whereas it is markedly diminished in dyspepsia. 2. The reaction to tuberculin tests. Von Pirquet's cutaneous tuberculin reaction is of great value in diagnosing cases of this kind. A positive reaction to either the human or bovine form of tuberculin is a call for active antitubercular treatment. 3. The quantitative and qualitative estimation of the sulphates in the urine. 4. The opsonic index. Most of the tuberculous cases of which I speak are those of glandular tuberculosis. The treatment in the two classes of cases varies considerably: in chronic dyspepsia, markedly reduced diet, &c.; in early tubercle infection, free diet, fresh air, the prevention of sources of glandular irritation and infection, and tuberculin. My own impressions as regards the administration of tuberculin in obviously glandular infections—mainly abdominal or cervical glands—or in cases which by the previous methods of diagnosis I have diagnosed as latent tuberculosis, and I think these are chiefly glandular, are: 1. That this treatment is very unsafe when large doses are employed or when the temperature is unsteady. 2. That it is quite safe in the minute doses hereafter mentioned, when commenced with a practically normal temperature and when the patient is kept under observation. 3. That in many cases tuberculin treatment appears to have no definite effect upon the condition one way or another. 4. That in cases in which treatment by rest, climate, feeding, and careful nursing can be employed, improvement by these means alone is usually so marked that it is impossible to attribute to tuberculin, when given in these cases, its due meed of praise or to judge whether it takes any part whatever in the improvement. 5. That, however, when treatment by rest, climate, feeding, and careful nursing cannot be properly adopted, tuberculin is often of very marked value. These are the cases which otherwise do badly, and tuberculin treatment is, with them, of the greatest importance. 6. That T.R. is, as a rule, preferable to P.T.R. 7. That for routine use the method of hypodermic injection is greatly superior to that of oral administration—the effect of giving tuberculin by the mouth varies very much. These impressions are derived from the treatment of about 100 cases during the past three years. At the commencement I used the opsonic index as a guide, but early found it impossible and, I think, unnecessary to take the index in selected cases such as these. The condition of the temperature is, I think, a sufficient guide for the initial administration and the clinical symptoms thereafter in relation to each injection. The forms of tuberculin I have used have been Koch's new tuberculin, T.R., and the corresponding bovine tuberculin, P.T.R. The two varieties I originally employed in order to determine their varying results in cases showing different reactions to von Pirquet's test with human and bovine tuberculin. I have come to the conclusion, however, that, no matter to which strain of bacillus von Pirquet's reaction is positive, T.R. is the tuberculin of the greater therapeutic value. The tuberculin was given hypodermically and by the mouth. By the mouth the doses I gave varied from 1-1000th of a milligramme to 1-250th of a milligramme and the results I considered very disappointing; only very occasionally was any satisfactory result noticeable. By hypodermic injection the initial dose varied from 1-10000th of a milligramme to an infant 9 months old, to 1-3000th of a milligramme to a child aged 12 years. The injections were repeated weekly or fortnightly, and the dose increased at long intervals and by very minute amounts, the rapidity and amount of increase desirable being gauged by the clinical condition. In all cases diminished vitality or health—apparent in any manner whatever—during the few days following an injection was considered a sign, either to diminish the dose or increase the intervals between doses, the conditions aimed at being that after each injection the child should continue steady improvement or show a step in advance. In several instances a child while under tuberculin treatment had apparently attained sound health; the tuberculin treatment was stopped for two or three months, the child relapsed, only again to improve on the renewal of the injections.—Dr. JOHN W. SIMPSON thought that it was almost impossible to diagnose chronic intestinal catarrh from tuberculosis of the intestine in children and was of opinion that reaction to the tuberculin test was not of very much value because it could be obtained in perfectly healthy children.—Dr. D. CHALMERS WATSON said that the same difficulty in diagnosis existed in young adults as in children. He drew attention to the value of thyroid in tuberculous cases.—Dr. J. S. FOWLER and Dr. BOYD also took part in the discussion.

## ROYAL ACADEMY OF MEDICINE IN IRELAND.

### SECTION OF SURGERY.

*Operative Treatment of Fracture.*

A MEETING of this section was held on Nov. 19th, Mr. JOHN LENTAIGNE, the President, being in the chair.

The PRESIDENT, in his introductory remarks, commented on the falling off in the attendances at the meetings, although during the past session many valuable papers had been read and many cases of extreme interest had been exhibited.

Mr. R. LANE JOYNT read a paper on the Operative Treatment of Fracture. He said that X ray examination of united fractures of the femur which had been treated by the common methods showed in many cases an amount of deformity which was little short of that seen in a number of museum specimens which were formerly regarded as examples of mal-union. The functional result in most of these cases was very bad. The only way in which shortening could be prevented and the fragments got into perfect line was by operation. Even when complete asepsis was not obtained suppuration was usually slight, and the results were much better than when the older methods were employed. A striking feature after the fixation of the fragments was the rapid disappearance of pain. He then described minutely the details of the operation for wiring, and of that in which Lane's steel plates were used. He looked upon Parkhill's method as being superseded in some cases; but there were others, notably where there was a compound fracture of the tibia with excessive suppuration and necrosed bone, in which it would be folly to attempt to suture or screw with Lane's plates or to use wire.

Mr. W. I. DE C. WHEELER read a paper on the Operative Treatment of Fracture and showed four cases where simple treatment had failed, but continuity and union were afterwards established by the use of screws and metal plates. In one case the operation was performed 3½ months after a compound fracture of the tibia and fibula which failed to unite, so that the limb was rendered useless. After operation complete union was obtained, the wound, which was partially open, healing over six screws holding two plates. The

fibula was wired. A second patient presented himself for treatment 11 months after the accident for a false joint of the tibia and an ununited fibula following simple fracture. Firm union was obtained after excision of the joint, and the introduction of screws, wire, and plates. The third case involved the surgical neck of the humerus, with a marked outward tilt of the upper fragment; the upper end of the lower fragment was embedded in the muscles under the coracoid process. A fortnight's treatment under the guidance of X rays failed to reduce the deformity. A single plate supported by an encircling wire was introduced to hold the fragments in position. The last case was that of a child, aged four years, who sustained a long spiral oblique fracture of the femur. Extension under an anæsthetic and immobilisation of the fracture in plaster-of-Paris failed to reduce the overlapping of the bones. Finally, an operation was performed, two plates and three encircling wires being introduced. All the wounds healed by first intention.

The PRESIDENT of the Academy (Sir CHARLES BALL) said that Mr. Joynt had given a very good demonstration of the application of practical mechanics to surgery. The instruments that had been shown were excellent on account of their size and capability, whereas the majority of instruments used for bone surgery were small and incapable. He had often speculated as to how the long American spindle turn-screw could take out a screw that could not be touched with a short one, and until that night he had never heard anything like a reasonable explanation.

Sir THOMAS MYLES said that he had in 1884 brought forward a suggestion for the operative treatment of fractures. A quarter of a century had passed since then, and 30 years since the introduction of antiseptic surgery, and yet it was only to-day that the operative treatment of fractures was becoming general. Mr. Joynt had shown that, even when suppuration ensued, if proper provision was made for drainage, the results of operative treatment were decidedly better than those of non-operative treatment, no matter how well carried out. Most of the surgeons present had, however, tried the method of wiring, the method of the Lane plates and the Parkhill method, which was capable of being used in many cases with less disturbance than the method discussed that night.

Mr. R. C. B. MAUNSELL cited cases in which he had got good results by wiring, but with great difficulty, whereas when he had used screws and plates in identical cases the operation was not at all a hard one.

The PRESIDENT said that if an operation was to be performed in a case of fracture the sooner it was done the better; delay added to the difficulty of the operation and interfered with the beneficial result. He had found the Parkhill clamp difficult to employ; it left several holes in the skin and there was always an increased danger of sepsis.

---

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Dec. 1st, Dr. A. Fulton, the President, being in the chair.—Dr. F. H. Jacob showed an unusual case of Pernicious Anæmia with microscopic specimens of the patient's blood. Dr. Jacob also read a few notes on a case of Delayed Chloroform Poisoning. The patient, aged 12 years, suddenly became maniacal 36 hours after the administration of chloroform, and very closely simulated a case of acute septic meningitis. A lumbar puncture revealed increased cerebro-spinal pressure but nothing else. Microscope slides showing fatty degeneration with areas of necrosis of the liver were shown.—Mr. A. R. Anderson read a paper on Some Remarks on the Treatment of Uterine Cancer. He considered first the possibilities of a cure and called a case "a cure" which was free from recurrence five years after the operation. The author maintained that the majority of cases can be cured if operated upon early enough and that the prospects of a cure are better than in cancer of the breast. The operation of choice was abdominal hysterectomy, which was completely superseding vaginal hysterectomy. As regards the operability of a case, all early cases, where the disease was confined to the cervix and the uterus was moveable and the broad ligaments were free, should be operated upon. But in his hospital practice only 1 in every 8 cases was thus favourable. Cases where the rectum and bladder were involved were clearly inoperable. By far the larger number of cases came within the intermediate doubtful area. Mr. Anderson then read notes on a series of 20 such doubtful cases upon which he had operated in 1897 and the four succeeding years. A mortality of 30 per cent. in this series induced him to advise against operating in these doubtful cases. But Wertheim's encouraging figures in 1905 induced him to follow his lead with gratifying results. Finally, Mr. Anderson uttered a plea for the more early recognition of the disease and the more frequent vaginal examination by medical men.—The President, Dr. J. Watson, Dr. Purves, Dr. C. H. Cattle, Mr. A. M. Webber, and Dr. G. A. Coulby took part in the discussion.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Nov. 18th, Mr. T. H. Bickerton, the President, being in the chair.—Mr. Thomas Guthrie read a note on the Removal of a Tooth-plate which had remained Impacted in the Œsophagus for three weeks by means of Brüning's Œsophagoscope. The instrument was demonstrated, and radiographs by Mr. C. Thurstan Holland showing the tooth-plate in the œsophagus were exhibited.—The note was discussed by the President, Dr. A. G. Gullan, Dr. T. R. Bradshaw, Mr. R. A. Bickersteth, and Mr. E. M. Stockdale.—Dr. W. B. Warrington read a note on the Results of Treatment in some of the Grave Cases of Diabetes Mellitus. The note was illustrated by lantern slides of charts showing various diets and the results of usage.—It was discussed by the President, Dr. Bradshaw, and Dr. J. Hill Abram.—Dr. F. H. Barendt showed a child suffering from Erythema Multiforme.—Dr. Nathan Raw showed the Brain of a child, aged 12½ years, dead from Hæmorrhage into the Right Lateral Ventricle.—Dr. Henry Briggs read a paper on the Restoration of the Female Pelvic Floor by Operation or an Extended Perineorrhaphy. The object of the paper was to urge, on anatomical and clinical evidence, that: (*a*) reparable damage (mainly obstetrical) to the pelvic floor calls for a prompt remedy during the parous period of life; (*b*) irreparable atrophy of the pelvic floor is a consequence of the still too frequent postponement of radical operative treatment until the post-parous period of life; (*c*) modern advances in anatomical knowledge and in surgical methods justify an earlier restoration of the pelvic floor; (*d*) loss of tissue by excision of any portion of the vaginal walls is unnecessary and no longer an argument against operation during the parous period of life; and (*e*) a safe, simple, and effective operation was described.—The paper was discussed by the President and Dr. J. E. Gemmell, and Dr. Briggs replied.

ULSTER MEDICAL SOCIETY.—A meeting of this society was held on Dec. 2nd, Dr. J. J. Austin, the President, being in the chair.—Dr. H. L. McKisack showed a man with Wasting of Certain Muscles of the Neck, Chest, and Arms as an example of Erb's Progressive Muscular Juvenile Atrophy.—Mr. Robert Campbell read a paper on the Treatment of Exophthalmic Goitre, dealing very fully with the suggested medical and surgical treatment, and giving full details of his own cases, in which he had, successfully and with good after-results, removed a portion of the thyroid gland. An interesting discussion followed.—Dr. T. Houston and Dr. J. Rankin gave a demonstration of the laboratory method of diagnosing syphilis following Fleming's modification of Wassermann's reaction. They also supplied a series of interesting printed tables showing:—(1) Cases with Definite History and Definite Syphilitic Lesions at the Time of Examination; (2) cases with Definite History of Syphilis; (3) Parasyphilitics; (4) cases with other Diseases; (5) Normal Controls.—Dr. J. A. Sinton showed preparations of the Spirochæta Pallida.—Sir John Byers, in the name of the large audience present, thanked Dr. Houston and Dr. Rankin for their extremely interesting piece of research work, which reflected the greatest credit on the clinical side of the Belfast Medical School.

NEWCASTLE-UPON-TYNE CLINICAL SOCIETY.—A meeting of this society was held on Dec. 2nd, Mr. J. W. Leech, the President, being in the chair. The following cases were shown: Dr. T. M. Allison: (1) A case of Fibroid Phthisis with marked dislocation of the heart; and (2) a case of Cystic Kidney.—Dr. G. Foggin: Some cases of Albinism.—Dr. D. W. Patterson: A case of Morphœa.—Dr. G. Hall: A case of "Acute Ataxy" occurring with a pneumonia in a child aged 3 years.—Dr. A. Parkin: A case of Mucous Colitis.—Mr. John Clay read a paper on an Irrigation Urethroscope

—Dr. F. C. Pybus read a paper on Appendicostomy as a Surgical Procedure. The speaker dilated on the technique of the operation, contrasting its results from the points of view of treatment and desirability with colostomy in the same region. Later he outlined the various conditions both above and below the appendix which were improved and cured by the operation.—The discussion was postponed to the next meeting.—Dr. W. T. Sewell then gave an Historic Review of Serum and Vaccine Treatment. In an interesting survey of the whole of the history of such treatment he traced the various steps of evolution in the methods from the earliest times right up to and including the processes involved in the modern method of vaccines.

# Reviews and Notices of Books.

*The Life of Sir William Broadbent, Bart., K.C.V.O., F.R.S.* Edited by his daughter, M. E. BROADBENT. London: John Murray. 1909. Pp. 306. Price 10*s.* 6*d.*

THOSE who only knew Sir William Broadbent in his days of prosperity can hardly picture him as a man of small beginnings and hard struggles, but the simple annals which lie before us tell us in plain and ungarnished language—often, indeed, in his own words—that his ultimate triumph was well deserved and honestly won. In the preface to these memoirs the writer tells us that "no one can be more conscious than I myself of the deficiencies of this attempt to convey an impression of my father's life; but as a sketch may sometimes be more suggestive than a finished picture, so it is hoped that the portrait of him which emerges from the record of his own words and actions may be one which those who knew him will recognise and welcome as adding to their understanding of his character, while those to whom he is but a name may accept it as faithful within its limitations." In our opinion the picture has been well and faithfully drawn. Moreover, it portrays him as a man no less loveable in his private life than he was great in his professional capacity. As we read the early chapters of his life it is the indomitable pluck and determination of the ambitious young Yorkshireman which arouse our admiration, and which may well put heart and courage into many a young medical man now struggling along the same thorny path.

As a boy William Broadbent was educated at a day school in his native village of Longwood, whence he proceeded to Huddersfield College as a weekly boarder. At the latter institution he distinguished himself by winning several valuable prizes, but at the early age of 15 he bade farewell to school life and entered upon a business career. Shortly afterwards, however, in deference to his personal wishes to enter the medical profession, he became apprenticed for five years to his uncle, who was in practice in Manchester. In spite of the hard and anxious work which this apprenticeship entailed, it appears that young Broadbent found time and energy to attend lectures at the medical school in Manchester and to acquire the necessary knowledge for passing with distinction his professional examinations both at the Colleges and the University of London. His original intention was then to take up an appointment as house surgeon and subsequently to settle in practice in Huddersfield, but he failed in every application that he made, and was greatly discouraged and perplexed by such a continued series of disappointments. These initial rebuffs were the determining point in his career, for they led immediately to a step of the utmost importance, for he went to Paris without delay. Paris at this time was the chief centre of medical science in Europe, and coming into association with such teachers as Trousseau, Desmarres, Rayer, Ricord, and Piorry, it is impossible to exaggerate the influence that such minds must have exercised on a young man of Broadbent's narrow and provincial experiences; indeed, it is not difficult to trace these influences on his character as a man, and in his scientific work as a physician. Moreover, it is highly probable that the first germs of his famous hypothesis in the bilateral association of the higher nerve centres fructified in the genial medium of the Salpêtrière. Broadbent's later successes, his Fellowship of the Royal Society, his work on the heart and on the pulse, his appointment as physician-in-ordinary to the Prince of Wales, his Baronetcy, and his work at St. Mary's, are still fresh in the memory of contemporary medical men and were recorded in these columns at the time of his lamented death. It is, however, as the clinical physician that Broadbent deserves best to be remembered. His powers of diagnosis and his capacity for forming an accurate prognosis were equalled by few physicians of his time; but on these points his memoirs are regrettably, but perhaps necessarily, silent.

In reading Sir William Broadbent's life it must occur to all those who only knew him in a professional capacity that his path would have been smoother if he had been less downright in his methods. Sir William Broadbent disdained to fight with the velvet glove. Neither had he the gift of tongues to round off the edges and asperities of his honest convictions. But in the annals of medicine he will live as one of the great English clinicians. This pleasant little memoir will be a delightful souvenir to those who personally had the honour of his acquaintance.

*Archives of the Middlesex Hospital.* Vol. XV. The Eighth Report from the Cancer Research Laboratories. London: Macmillan and Co. 1909. Pp. 204.

THIS volume opens with tabulated synopses of the post-mortem examinations and operations in cases of malignant disease at the Middlesex Hospital during the year 1908, with records of the results of microscopical examination. Statistical studies of the cases of malignant disease of the cervix uteri based on the records of the Middlesex Hospital from 1904 to 1908, by Dr. H. MacCormac, and of malignant disease of the breast for the same period by Dr. H. Beckton, form a continuation of previous studies published in the Archives. Dr. Helen Chambers contributes an interesting paper on Malignant Disease of the Thyroid Gland. She concludes that the diagnosis between an innocent and a malignant tumour of the thyroid is often extremely difficult, and maintains that only those cases are to be regarded as malignant in which infiltration of surrounding tissues occurs. Apart from this evidence of infiltration, tumours other than sarcomata cannot be diagnosed as malignant from their histological structure alone. She states that carcinoma of the thyroid often pursues a very protracted course. Dr. Bryden Glendinning contributes a paper on Primary Malignant Disease of the Ovary, comprising a statistical study of 41 cases of primary carcinoma of the ovary, 16 cases of primary sarcoma, and 50 cases of papilliferous cystadenoma. Dr. Hector A. Colwell, in an interesting study of the erepsin in the tissues in malignant disease, finds that the ereptic values of tissues from cases which are the subject of serious and chronic organic disease tend to be lower than the normal, and that malignant disease conforms to this general rule. In a further contribution in collaboration with Dr. MacCormac on the ereptic power of the tissues of normal and cancerous mice, the results obtained seemed to suggest a slightly higher ereptic value in the tissues of mice harbouring a tumour than in the normal mice. Dr. J. C. Mottram describes a spectroscopic method for the quantitative analysis of the tissues for potassium and sodium. Dr. W. S. Lazarus-Barlow deals with the influence of carcinomatous and non-carcinomatous tissues upon electroscopic leak—a research which forms part

of his inquiry into the evidence as to whether there is any connexion between radio-activity and the carcinomatous process. He also records some experiments made in conjunction with Dr. Victor Bonney on the influence of radio-activity on the division of animal cells. The cells employed were the ova of the Ascaris megalocephala of the horse. The results obtained from X rays, radium, thorium, and uranium were twofold. In small doses these substances caused division to proceed at a faster rate than normal, whereas in large doses an inhibitory effect was obtained leading to total arrest of development in some instances. Sometimes monstrosities and irregular divisions were obtained. Another paper by Dr. Lazarus-Barlow and Dr. Colwell deals with the influence of atomic weight and valency upon the radio-activity of uranium and thorium compounds. Dr. MacCormac in a preliminary communication describes the power possessed by certain micro-organisms, notably staphylococcus pyogenes aureus and albus, bacillus diphtheriæ and bacillus tuberculosis, to affect a photographic plate in the dark. Dr. Beckton, in a paper on the granules in cells of normal tissues and new growths, states that in malignant new growths granules tend to disappear or are absent from the particular type of cells involved. Mr. C. W. Rowntree discusses the histology of X ray dermatitis in an interesting paper. Some experiments on the action of certain animal and other substances on the development of the ova of Ascaris megalocephala are described by Dr. Lazarus-Barlow and Mr. Somerville Hastings.

As a record of laborious work in the endeavour to throw light on the complex problem of the genesis of malignant disease this volume is worthy of high commendation.

---

*Text-book of Anatomy.* Edited by D. J. CUNNINGHAM, F.R.S., Professor of Anatomy, University of Edinburgh. Third edition. London: Hodder and Stoughton; Oxford: Henry Frowde. 1909. Pp. 1427. 936 illustrations. Price 31*s.* 6*d.*

THE preparation of this edition of his well-known text-book was the last task of Professor Cunningham's life; he died a few days after he drafted its preface. He was not only a master-anatomist, he was its master-expositor; he had, beyond all cavil, the most gifted pen of modern British anatomists. He was a voluminous writer, but of all his works it is most likely with this text-book that his name will pass onwards amongst medical men. Only three chapters of it are actually written by himself—those on the brain and spinal cord, on the respiratory system, and on the ductless glands—but it is not too much to say that there is not a page of the book that does not reflect his influence, his precision, and his kindly spirit. This is naturally the case, for his collaborators were pupils of his own or of his master, Sir William Turner. There is no better text-book of anatomy in the English language than this product of the Edinburgh school; indeed, in many respects it is the best book.

Of the 14 sections into which this work is divided only two have undergone alteration for the present edition—the section on Osteology by Professor Arthur Thomson of Oxford University, and that by Professor A. M. Paterson, of Liverpool University, on Myology. The parts by the editor are unchanged; the Digestive System by the late Professor Ambrose Birmingham, the Urino-genital System by Professor A. F. Dixon, the section dealing with Joints by Professor D. Hepburn, the Organs of Sense and the Integument by Professor R. Howden, the chapters on Embryology and the Vascular System by Professor A. H. Young, now unfortunately withdrawn from anatomy, and by Professor A. Robinson, now of Edinburgh University, and the chapter on Surface and Surgical Anatomy by Mr. Harold J. Stiles all remain practically as they were in the edition last reviewed by us.

The chapter on Osteology has undergone revision and extension. Illustrations have been added, showing centres of ossification as seen in radiograms; the articular surfaces of the bones have been emphasised by the use of colour; and areas of muscular attachment have been shown on specially drawn figures. In an appendix inserted at the end of the section Professor Thomson has given a most useful summary of the variations of the skeleton, of the terms and methods used in physical anthropology, and of the various problems concerning the morphology of the skull and skeleton. In only his section of the book are references given to recent or, indeed, to any literature. In a book of this size and standard the senior student has a right to expect guidance as to literature. The alterations in the chapter on Myology are connected chiefly with the introduction of new illustrations, and to these must be extended the very highest praise. They are artistic, truthful, and yet diagrammatic enough to convey the most essential features. The description of the pelvic fascia has been altered; but in spite of the fact that Professor Paterson is our leading authority on this complicated structure it cannot yet be said to be simple and easy of understanding.

In the sections that have been rewritten the nomenclature proposed by the Basle committee has been adopted as far as is possible. We are glad to note from the preface that the late Professor Cunningham was not altogether convinced that the adoption of the Basle terminology, which is being forced upon medical students in many parts of the world, especially America, was altogether advantageous for British anatomy. We are certain it is not. Many of the proposed terms are clumsy and unpractical. If we adopt this method of naming structures the anterior layer of the triangular ligament becomes the *fascia diaphragmatis urogenitalis inferior*, the internal arcuate ligament the *arcus lumbo-costalis medialis*, the trapezoid of the wrist the *os multangulum minus*, clumsier terms which give an advantage to no one.

We wish this text-book every success. In the preparation of the new illustrations no expense has been spared.

---

## LIBRARY TABLE.

*The Practical Medicine Series.* Comprising 10 volumes on the Year's Progress in Medicine and Surgery. Vol. II.: General Surgery. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., Professor of Surgery in the Northwestern University, Chicago. Chicago: The Year Book Publishers. Series 1909. Glasgow: Gillies and Co. Pp. 617. Price 8*s.*—The rapid expansion of surgery makes it practically impossible for the surgeon to be fully conversant with the most recent advances in the science unless he is able to refer to one of the several valuable annuals in which the progress of medical science is recorded. This volume is, we believe, the only one in the English language which is devoted only to surgery, and under the able editorship of Professor Murphy it is sure to be representative and accurate. It is true that many points suggest themselves for criticism, and here and there we consider that the material has hardly been adequately digested, but we appreciate the difficulty of dealing with such a large amount of added knowledge. The editor is wise in commenting on some of the new operations suggested, but it would have enhanced the value of the work if we had been provided with more of these comments from his pen. It is sometimes difficult for the reader to form an exact idea of the value of any suggested change from the necessarily short account presented to him in an annual, and therefore we should like to have had the opinion of Professor Murphy on these points. A good many illustrations are contained in this useful book.

*Guide to Promotion for Non-Commissioned Officers (Corporal to Staff-Sergeant) and Men of the Royal Army Medical Corps, with Appendix on Hints to Young N.C.O's on Clerical and Other Duties in a Military Hospital.* Compiled by Captain S. T. BEGGS, M.B. R.U.I., Royal Army Medical Corps (Reserve of Officers). Second edition. London: Gale and Polden, Limited. 1909. Illustrated. Pp. 380. Price 3*s.* 6*d.* net.—The favourable reception accorded to the first edition of this book having fully realised the hope expressed by the compiler that the guide should fulfil a useful purpose in the Royal Army Medical Corps and induce men to go in for promotion, he has accordingly issued a second edition. Great care has apparently been taken in bringing all matter up to date in accordance with the latest regulations, official text-books, and army orders, all of which have been strictly adhered to. New matter has also been added to make the guide applicable for the subjects connected with promotion to staff-sergeant, and a new section is embodied dealing with semaphore signalling, which is now authorised as part of the instruction of the Royal Army Medical Corps in field training. The Guide should also be useful for Royal Army Medical Corps officers, especially those of the junior ranks who may have to give courses of instruction to their corps orderlies. The practical value of the book has been greatly increased in the present edition by the inclusion of blank leaves between the various chapters and sections for notes, and also by the inclusion of references to the Military Medical Regulations, from which answers to questions have been taken. It is to be regretted that the author has not seen fit to include an index.

*The Shadows of the Valley.* By the Rev. A. G. MORTIMER, D.D. London: Skeffington and Son. 1909. Pp. 275 Price 5*s.* net.—The sub-title of this book, "A Practical and Devotional Guide in Sickness and Death," sufficiently explains the purpose of its author, who is the Rector of St. Mark's, Philadelphia, in having written it. The work is divided into three parts, of which Part I. may be called a commentary upon the Office for the Visitation of the Sick as it appears in the Prayer Book of the American Church: the Office is practically the same as that appointed by the English Church. Parts II. and III. deal with sickness and death respectively, and treat of these two all-important matters from the point of view of the sufferer and his spiritual adviser. There comes a time to all medical men when they can do no more for their patients, and at such times the physician of the body gives place to the physician of the soul, who, even if the dying man is unconscious, can comfort those to whom he is dear. Dr. Mortimer's book should be of much use to the clergy, to the sick themselves, and, in fine we may add, to all those who believe that the end of this life is not the end of all things. There is an excellent chapter upon the care of the dead.

*Norwegian Self-taught, with Phonetic Pronunciation (Marlborough's Self-taught Series).* By C. A. THIMM. Fourth edition, revised and enlarged by P. TH. HANSSEN. London: E. Marlborough and Co. 1909. Pp. 128. Price, wrapper, 2*s.*; cloth, 2*s.* 6*d.*—In noticing previous volumes of this series we have mentioned that they are likely to prove useful to all who wish to obtain a speaking or reading acquaintance with a language without devoting too much attention to the grammar. This volume is very similar to the others which we have reviewed. It contains just those words which are likely to prove useful to a traveller in Norway. The grammar supplied is very elementary and occupies only some nine pages. The phrases are many and convenient, and wherever a Norwegian word is used its pronunciation is given under a simple system so that the reader should have no difficulty in pronouncing the word so as to be understood by the inhabitants of Norway, even though the finer nuances are necessarily missed.

## JOURNALS AND MAGAZINES.

*Archives of Pediatrics.* Edited by LINNÆUS EDFORD LA FÉTRA, M.D., and ROYAL STORRS HAYNES, M.D. Vol. XXVI., No. 9. September, 1909.—This American journal is well known all the world over to those who are interested in the diseases of children. The September number of this year is an excellent one and in it Dr. P. J. Eaton contributes a very practical paper on "A Few of the Things a Pediatrician Should Teach." The great fault of specialists in diseases of children is that few of them have had opportunity for studying the infant and the child in health. The management of the nursery and the training of the infant are of far greater importance than subtle points in diagnosis and pathology. Dr. Eaton insists strongly that physicians should be able to instruct mothers and nurses on such important matters as the regulation of sleep, exercise, digestion, and defæcation. He insists that dentition is only a physiological process when normal, and that lancing of the inflamed gums so as to free the erupting tooth at once relieves symptoms and restores the alkalinity of the saliva. Dr. G. R. Satterlee quotes a case in which the status lymphaticus was diagnosed during life, and apparently confirmed by Roentgen ray photography; the case, which was shown at the Section of Pediatrics (New York Academy of Medicine) gave rise to an interesting discussion. Altogether this number of the Archives is a good one; it reflects great credit on the joint editors and will well repay perusal. An article on Bacterial Vaccines by Dr. B. Raymond Hoobler, and a report on two cases of empyema by Dr. Oscar M. Schloss especially deserve attention.

*Edinburgh Medical Journal.*—Two introductory addresses appear in the November issue of this magazine—one by Professor Arthur Robinson, entitled "A Glance at Anatomy from 1705 to 1909," and the other by Mr. H. Alexis Thomson on the subject of surgery. Both deal retrospectively with the Edinburgh school, and together they indicate the connexion between anatomy and surgery and between surgery and physiology. Dr. Lachlan Grant writes on the Medical Man as a Reformer and enforces the need for a Minister of Public Health, supported by an adequate staff of experts, to deal with the whole field of public health administration. This paper has been already noticed in THE LANCET. Mr. James M. Graham advocates the treatment of mammary abscess by suction and quotes a series of cases in which strikingly good results were obtained.

*The Medical Chronicle.*—The October number of this journal contains an account by Dr. Judson S. Bury of an interesting case of sarcoma affecting the crus, corpora quadrigemina, and optic thalamus, in which there was no hemianopsia, and none of the usual symptoms of intracranial tumour, in the form of vomiting, headache, or optic neuritis, but paralysis of the motor nerves of the right eye and loss of stereognostic sense in the left hand. Dr. W. J. S. Bythell deals with the skiagraphy of renal and ureteral calculi, emphasising the importance of proper preparation of the patient, and illustrating his article with a series of typical X ray photographs. Dr. Eugene S. Yonge writes on Paroxysmal Rhinorrhœa and discusses the indications for surgical interference in these cases and the varieties of operation which may be undertaken.——In the November number is published an abstract of a dissertation by Dr. George Duncan Dawson on the Pharmacology of *Phytolacca abyssinica*, which would seem to contain an active principle allied to digitalin in its action, increasing the force of the

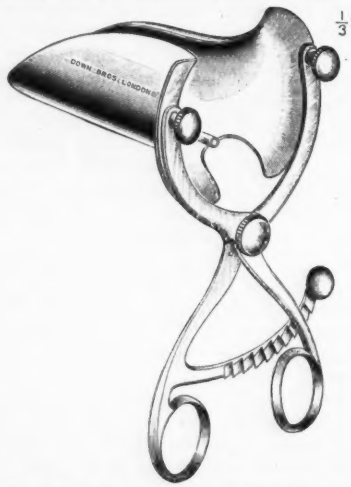
heart's beat, constricting the blood-vessels, and raising the arterial pressure. It is not at present in clinical use, but the author believes that it may prove of value. A somewhat brief abstract of a similar dissertation by Dr. C. E. Lea deals with Cardiac Arrhythmia, with especial reference to so-called nodal rhythm, in which the contraction of the ventricle coincides with or precedes that of the auricle. Dr. Lea finds that it occurs chiefly in mitral disease and in arterio-sclerosis.

*The Dublin Journal of Medical Science.*—An introductory lecture delivered by Dr. A. Campbell Geddes, and published in the November issue of this magazine, is devoted to a study of the Aims of Anatomy. He endeavours to correlate certain physical and physiological peculiarities, suggesting, for example, the existence of an abnormal human type possessing short bodies, long legs, and a lack of reproductive power, and also a connexion between full veins on the thoracic wall, and increased intrathoracic venous pressure due to smallness of the pulmonary veins. This latter peculiarity may induce defect in the lymph-flow and favour the lodgment of the tubercle bacillus. Mr. William Taylor records two cases of hæmatemesis successfully treated by operation. He advocates such treatment in all cases of bleeding which is apparently due to a chronic, as opposed to the ordinary acute, ulcer of the stomach.

# New Inventions.

## BLADDER SPECULUM FOR OPERATIVE WORK.

THE illustration represents a dilating bladder speculum made for me by Messrs. Down Bros., St. Thomas's-street, London, S.E. The handles of the speculum are provided with a toothed rack, and may be used closed when examining the prostatic region or the pouch left after prostatectomy, or expanded, as shown in the figure, as when excising villous growths. On the hinged side of the speculum an opening is left through which an electric lamp can be inserted (unless a head lamp be




preferred). The reverse side of the speculum gives sufficient dilatation to allow freedom for operative work, such as the excision of the base of a villous growth, the bevelling of the blades enabling the base of the growth to be brought near the surface and the mucous membrane of the bladder sutured. The speculum was designed to meet a distinct want, and the various bevels and dimensions have been carefully worked out; it has proved in practice to be a very useful instrument.

Bristol. THOMAS CARWARDINE, M.S.Lond., F.R.C.S.Eng.

# THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

FRIDAY, NOV. 26TH.

The Council resumed its sittings to-day, Sir DONALD MACALISTER, the President, being again in the chair.

*The Medical Curriculum.*

The debate on Dr. J. Y. MACKAY'S motion approving of the recommendations of the Education Committee with regard to the curriculum in medicine was continued.

Mr. HODSDON said it was evident from what had fallen from previous speakers and also from the various proposals laid before the Council that the present state of affairs was not quite satisfactory. As had been pointed out, they must keep in mind that the General Medical Council had to legislate for duly qualified medical practitioners and not for specialists. When the curriculum was extended to five years the intention was that the fifth year should be devoted to clinical work. But when they came to look at the figures they found that taken all over, there was only an average of 13·8 per cent. of students who qualified in five years. If they looked to the cause of this and closely studied the figures put forward by the chairman of the Education Committee, they found that the earlier subjects had been encroaching on the final group to a great extent, and the remedy was either to lengthen the curriculum, which was not expedient at present, or to adopt some such proposal as was put forward by the Education Committee. That proposal would constitute a new departure and it therefore behoved the Council to proceed cautiously. But he was convinced that if the proposals of the committee were adopted—and he hoped they would be—the effects would be beneficial. Licensing bodies would see that the earlier subjects were taught with a sense of due proportion and the importance of clinical work would be made permanent. Further, the student would have it brought under his notice that unless he devoted a certain time to clinical work he would be retarded, and consequently he would quickly adapt himself to the new circumstances. He supported the report cordially and hoped that it would be adopted.

Mr. THOMSON said that hardly any one of the speakers had gone into the details of the committee's recommendations. Dr. Norman Moore had spoken in generalities. Sir Christopher Nixon had carefully avoided any question of detail and had expressed the hope that whatever happened the medical student might not be hardly dealt with. The President had for their benefit paraphrased the recommendations of the committee. It seemed to him (Mr. Thomson) odd that the recommendations of such a committee should require such a paraphrase or any explanation. From the remarks the President made it appeared that what was meant was that for two and a half years the student would give his undivided attention to the final studies, and that he would not be allowed to go up for examination in them until two years had elapsed after passing the examination in anatomy and physiology. Dr. Mackay had expressed dissent from this reading of the recommendations by the President. He (Mr. Thomson) had had the same difficulty in understanding the recommendations as many members of the Council had. There was no mention of a "block" in Dr. Mackay's address when he introduced the matter. It was in the details of the scheme that its application might be harmful. Dr. Mackay had advanced as evidence in proof of the sufficiency of five years for the curriculum the fact that a certain percentage of men in the Victoria University obtained their qualification in five years. He had also mentioned the fact that in Glasgow there was a large proportion of men who took their degree in the same time. He was grateful to Dr. Mackay for having drawn attention to that fact. In the Education Committee's report of 1908 they would see under the heading "University of Glasgow" that 20 men out of a total of 56 passed in a 57 months' course. Let them look at the total length of time occupied in the first and second examinations and they would find it was 34·2 months. The time given to the examinations in medicine, surgery, and midwifery was only 22·8. It was not

his business to explain these figures, but he would draw from them a certain inference—that was, that the men who were delayed by the high standard of examination were able by their own energies to recover and acquire the sufficiency of knowledge which Dr. Mackay himself emphasised by a reference to the inspector's report. Now, Dr. Mackay could not have it both ways. If he set this forward as a proof that the work could be done in five years, he (Mr. Thomson) must point out to him that it was also the most convincing proof of the possible hardship which the insistence upon these 27 months subsequent to the passing of the anatomy and physiology examination would result in. If they insisted on these 27 months it would mean that the men who by their own industry and energy had endeavoured to do their best would be penalised. If these 27 months were insisted on—and they could only be insisted on by a process of "blocks"—it would be impossible for any man, certainly in the Scottish Universities, to get his qualification within the five years.

Dr. KNOX confessed to a slight feeling of disappointment concerning the report of the committee. He had looked for a little more progress in the proposals and a little more boldness. When the Council last interfered with the curriculum they lengthened it, and they proposed that the last year should be entirely devoted to clinical work. Those proposals were loyally received and acted upon in Scotland, and even up to the present they remained the ideal which both teachers and students in Scotland were working up to. The value of these proposals had been rather neutralised by the raising of the preliminary science subjects to such an important position that practically all students devoted their first year entirely to them. The increasing severity of those scientific subjects had also affected the progress of the student. A great number of extra subjects had been introduced into the final stage of the student's curriculum, subjects like insanity, bacteriology, diseases of the eye, ear and throat, to all of which the student felt he must devote a considerable amount of time. These things had altered the aspect of affairs since the Council last amended the curriculum. For these reasons he would have expected that when now they had tackled the question of the curriculum they would have shown a little more boldness than they had done and would have endeavoured—he did not say by what means—to lighten the student's work, to make it easier, and to promote so far as possible a greater attention to the final subjects. The effect of the committee's recommendations seemed to be that all students with the view of being certain in their anatomy and physiology would devote still more time to these subjects. That was not in itself a bad thing. But when they considered there was such a short period of 21 or 27 months for the final subjects he did not see how they could possibly be otherwise than hindered and their examinations in the final subjects retarded. He thought the curriculum would be extended considerably owing to this implied or avowed "block" in the middle of it. He did not like a "block" at all, and especially disliked it between anatomy and physiology on the one hand and medicine and surgery on the other. As a teacher of surgery he rejoiced when he got hold of men who knew their anatomy well. That was the way men made greatest progress in surgery and distinguished themselves in examinations. Surgery and anatomy were one and indivisible, and even in the case of physiology it was impossible to separate it from the practical. If there was to be any "block" he would leave it to the students to find where it was possible to expand their energies and where it was possible to concentrate. So far as he could see from the discussion that had taken place they were face to face with an extension of the curriculum. How it should be done and in what way he did not know, but he would be inclined to suggest, seeing there was a difference of opinion on the subject, that the Education Committee should take back their report to see whether they could not make a more advanced proposal. The report was such a slight advance that no great harm would be done if a pause were made to allow the committee to bring up further proposals modifying and probably extending the curriculum.

Dr. TAYLOR expressed dissent from the views enunciated by the last speaker. He thought there should be a period of undivided clinical study. He had been struck with the fact Mr. Thomson mentioned, that so few speakers had tackled the details of the recommendations, and he had also been impressed with the fact that nobody had moved an amendment. Therefore the conclusion must be drawn that they were all agreed upon it. He was convinced that a student could not adequately study medicine unless he knew his anatomy and physiology thoroughly, and to invite students to learn medicine in their second year before they had got a thorough grasp of anatomy and physiology was a mistake. He was in favour of the principle underlying the committee's recommendations. The question of whether two years or two and a half years should be adopted was not before them in that particular form, and it might be safer to adopt a minimum of two years to begin with. In the case of two and a half years he did not see any exceptional difficulty so far as the five years' curriculum was concerned.

Dr. LATIMER said that although the curriculum had been extended to five years it was not a five years' curriculum. The curriculum from various causes reached an average of nearly seven years. He thought, however, that they should aim at something which would enable students to learn their profession and practise it confidently within a period of five years. If there was to be a "block," it should be at the commencement of the curriculum and not during its progress. The earlier subjects could be taught in schools to enable the students to pass in them in the preliminary examinations.

Dr. D. C. MCVAIL said that nobody had proposed to lessen the number of subjects required for the medical diplomas. Nobody had proposed to leave out biology, physics, chemistry, or anatomy. All these subjects had been taken for granted in the debate, and none of the subjects introduced 15 years ago were to be got rid of. Were any of these subjects examined in with undue severity? Had the Universities and the Colleges required too much knowledge in the subjects of biology, chemistry, physics, or anatomy? Not to his knowledge. He had seen no complaints of that. Nothing had come before the Examination Committee to show that the examinations in these subjects had been unduly severe. No one proposed that there should be less practical teaching. Where was the difficulty then? The difficulty was in the five years. Five years had become too short a time for the average student. That was all. He did not think it showed failure in their system of teaching or examining that so few took their curriculum in five years. There were, no doubt, exceptional men who in five years could master all the subjects, but they must always be in the minority. If any student who desired to take a reasonably good position in his profession were to ask him what time he should devote to his curriculum he would reply, "No less than six years, and if possible seven." The average man could not put all these subjects into five years, and the very good men did not want to do it. They would never get a five years' curriculum with the present subjects. That being so, it seemed to him it was no business of theirs to try to impress on the examining bodies or the students that they should qualify in five years. The General Medical Council had to see that the persons to be entered on the Register had been adequately taught and examined. It lay with the Council to say what the subjects should be in the qualifying examination, but for the Council to try by any artificial manœuvre to make the bulk of the students cram up all these subjects in five years was not their duty. He was entirely against introducing any "block." The student would introduce his own "block." The schools were doing admirable work. The difference between the questions set at examinations 30 years ago and now was almost inconceivable. The progress that had been made by the profession since the General Medical Council was called into being had been enormous, and that had been largely brought about by the Council itself. There was not the slightest need for the Council now to take up the whole thing by the roots. He knew how enormously the schools in Scotland had improved in teaching and how much better the students were educated in them than when he knew them first. In England what a wonderful development there had been in regard to the two old Universities, and what a wonderful development there had been particularly in the schools in London! The examinations of the London Conjoint Board and the London University were entirely different from the examinations 30 or 40 years ago. Why should they begin in the way suggested? The schools of London, and others, were perfectly able to give advice to their students without the Council devising any artificial "blocks." Where were the "blocks" to be? Different places had been suggested. If he

were in favour of a "block"—which he was not—he would put it before the men went up to their clinical subjects. To talk about a "block" after the science subjects with the assumption that they might be taught in public schools seemed to be quite futile. There were some public schools where no doubt they could be taught, but they could only be properly taught to boys who had got quit of their English, Latin, and mathematics. He was satisfied with the present state of affairs. The last cycle of inspections and visitations showed a level that never had been reached before, and when the time came for another circuit he had not the least doubt that still greater improvement would be shown. While it had been very serviceable that the Education Committee should have collected all these facts and figures he did not think that any case had been made out for the Council to interfere just now. Therefore he could not support the committee's resolution in so far as it involved the putting in anywhere of a "block."

Dr. MCMANUS said he realised that anatomy and physiology were the foundation of all things, but he suggested that the sooner they got the young men into the wards and the longer they kept them there the better it would be for the public. Although he sat under some of the greatest professors in Dublin, he did not remember a word of their lectures, but what he learned from these same professors in the wards he had never forgotten. If they had fewer lectures and more practical work the better it would be for the rank and file of the profession.

Dr. ADYE-CURRAN said that year after year he had listened to suggested proposals for adding to the curriculum, and heaven only knew where it would end. In a year or two the curriculum would be extended probably to ten years, and it would cost £1000 to qualify. If this perpetual addition to the final was to go on something should be taken away from the preliminary. In the first year or two the student learned nothing about medicine proper. All he learned were extraneous subjects that could be referred to the schools. What would be the result of these proposals before them? Their result would be that there would be no medical students, because parents could not afford to keep their sons six or seven years while they completed their studies. He hoped the five years' curriculum would be fixed definitely once and for all, and that it would not be left in the unsettled state it was in at present.

Dr. CATON said the committee's recommendations offered a *via media* which would allow the student to disencumber his mind of the earlier subjects and so leave him free to give his sole attention to the later subjects.

Dr. MANN said they ought to insist upon the student's knowledge of chemistry, physics, and biology, so as to have well-educated men in the profession. He agreed with Dr. McVail about the difficulty of getting these subjects taught in schools. He knew the kind of thing that was taught in schools: the students got a smattering of all the "ologies" and got nothing of anything that was worth preserving. To put these subjects into the elementary part of the student's career before he began the study of his profession would result in the profession itself suffering.

Dr. MACKAY, in reply, said the Education Committee had been assailed on two sides. On the one hand, they were attacked for having gone too far, for having put forward proposals which would seriously retard the student, and for not considering the student. On the other, they were assailed because their action was not bold enough. The committee had adopted a *via media*. The reports of the committee on this subject were spread over three or four years, and because all these reports were not before the Council he admitted it was a little difficult to grasp all the details. Those reports contained many findings on many subjects, but the committee had not put all the findings before the Council; they had simply taken out what seemed to be the most pressing necessity of the time and addressed themselves to that. They had put forward a conclusion which referred directly to the length of the curriculum. The other matters in the reports were not ripe for solution and might be taken up hereafter. He had decided to put before the Council an amended motion in more formal and precise terms in place of the motion on the paper. This was as follows:—

That in the opinion of the Council the regulations of the licensing bodies should be so framed as to ensure that the study of the final group of subjects in the medical curriculum, including pathology, medical jurisprudence, public health, therapeutics, midwifery, surgery, and medicine, shall be pursued (*a*) throughout a period not less than two and a half academic years (27 months) following upon the completion of the examination in anatomy and physiology; or (*b*) throughout a period not less than three academic years (33 months), two of which (21 months) shall be subsequent to the completion of the above-mentioned examination.

The committee believed there was no danger in overlapping if it was not carried too far, and they desired each body to select either of the alternatives, which were absolutely equivalent in time value. There was no proposal in the scheme to limit the period of final study to the last part of the curriculum. The final study might begin at any time according to the wishes of the body. It had been pointed out to him that there were cases in which it would be exceedingly hard to enforce those rules absolutely, and he proposed to add to the motion he had just read the following:—

Any case of exemption from this rule should be reported to the Council by the licensing body granting the exemption.

That admitted the principle of exemption and freed the bodies to suggest any form of exemption they thought necessary. The committee did not think the time had come to establish a six years' course, but the laying down of the reforms in the motion would have the effect of forcing many of the bodies to reconsider the arrangements of the earlier part of their curriculum, and indirectly it would prevent the necessity for a six years' course in the immediate future. When the time came to make another rearrangement it would probably be the final portion of the course that would require extension. That, however, was a matter for future consideraton. The committee at the present moment did not think the time was ripe for relegating to the schools the medical requirements in chemistry, physics, and biology. An interesting experiment was being carried on at present in connexion with this matter. The English bodies had recognised a certain number of selected schools, and students were coming up from these schools, having passed through the school curriculum in these subjects. The committee had not yet had time to judge of the results. The greater number of the schools in the country were not in a position to take up the requirements in these subjects and deal justly with them, particularly in the department of biology. Although he was a young member of the Council he had already learned that the business of the Council was to lead and not to drive, and that they would likely do damage if they pressed bodies to adopt any policy or course against their will. That was the reason why the committee had put forward no drastic proposal. They sought only to establish a principle which they felt would be accepted. It could be extended in due course if it was found necessary or expedient.

At the suggestion of the PRESIDENT, Dr. MACKAY did not put the amended resolution in the form in which he read it to the Council. Instead he proposed the motion in the following terms:—

That the regulations should be so framed as to ensure that the study of the final group of subjects should extend over not less than two and a half academic years after passing of the examination in anatomy and physiology.

SIR HENRY MORRIS said he thought they should do what was practicable and likely to be accepted by the various bodies. He thought, considering what had been practicable up to the present, the time had hardly come when they could ask all the examining bodies to insist upon two and a half years. He therefore moved as an amendment that the following should be substituted for Dr. Mackay's motion:—

That the regulations should be so framed as to ensure that the study of the final group of subjects should extend over not less than two years after the passing of the examination in anatomy and physiology.

Dr. NORMAN MOORE seconded the amendment.

On a vote Sir Henry Morris's amendment was carried by a substantial majority. It was then put as a substantive motion and agreed to, with two dissentients.

On the motion of Dr. MACKAY, it was decided that the two years mentioned in the resolution should be defined as 24 months.

The PRESIDENT said that the addition suggested by Dr. Mackay regarding exemptions was not necessary as exemptions were already provided for.

Sir HENRY MORRIS moved:—

That it be referred to the Education Committee to consider further the place in the student's career which the preliminary sciences should occupy; and that the committee be requested to frame and submit to the Council a pattern scheme of medical education whereby the required minimum of the several subjects to be included in the curriculum can be adequately studied and the requisite examinations

thereon passed by the average student within the period prescribed by the curriculum.

In the near future, he said, the question of the re-arrangement of the earlier part of the curriculum must arise. He had had investigations made with regard to the matter, and the figures showed that those boys who had been trained in the early subjects in the general schools of the country passed in greater proportion than those who had been trained in the various medical schools. He proposed the motion with the view of trying to standardise the minimum required for the curriculum.

Sir C. NIXON seconded. The main consideration of the Education Committee, he supposed, would be to see whether they could not put the subjects of the preliminary education outside the medical curriculum. If the motion meant anything it meant a reconstruction of the medical curriculum.

The PRESIDENT: No, I don't think that.

Sir C. NIXON: Then what does it mean?

The PRESIDENT: The Education Committee will tell you when they report.

Sir C. NIXON said he supported the motion believing it desirable that a radical change should be made in the medical curriculum.

Dr. MACKAY said the Education Committee would gladly do its best to look into this question, although he was not hopeful that a curriculum could be drawn up which could be done by the average man in less than five years.

Dr. MCVAIL said that knowing, as he did, the system of medical education in Scottish Universities he felt perfectly certain they would never dream of accepting school botany, school zoology, school chemistry, or school physics as part of the curriculum for the medical degree.

The PRESIDENT: I do not think that is raised here.

Dr. MCVAIL: I think it is. The Council was going to ask the committee to lay down a pattern scheme. That meant that the Council was dissatisfied with the present scheme, and that it admitted the present scheme was not a pattern scheme. That was what certain of the Scottish Universities would never look at, and if the Universities of Scotland would not take it on it was extremely unlikely the English Universities would do so. It would create a big division between degree-granting authorities and authorities that did not grant degrees but granted diplomas. It was a dangerous resolution in his opinion, and he objected to it being sprung on the Council without notice.

The motion was carried by 17 votes to 5. Ten members did not vote and two were absent.

Dr. SAUNDBY moved that—

The question of allowing candidates to enter for each of the subjects separately of the final examination in medicine, surgery, and midwifery be remitted to the Examination Committee for consideration and report.

He mentioned that a great deal of interest was taken in this matter. This was particularly so at Edinburgh. He would content himself in moving his motion in a few words.

The motion was agreed to.

*Penal Procedure.*

The Council received *in camerâ* a report from the Executive Committee with regard to penal procedure.

*Penal Cases.*

The Council resumed the hearing of penal cases.

The case was considered of William Shaw, registered as of Larne, co. Antrim, Lic. R. Coll. Phys. Edin. 1886, Lic. R. Coll. Surg. Edin. 1886, who was summoned to appear before the Council on the following charge as formulated by the Council's solicitor:—

That you were convicted on March 24th, 1908, and again on March 23rd, 1909, at the Larne Town Court of being found drunk in a public street, and on August 24th, 1909, at the Larne petty sessions of the following misdemeanour—namely, of being found on licensed premises in contravention of the provisions of the Licensing Acts.

Mr. Shaw did not attend but he sent a letter of explanation.

The PRESIDENT, in delivering the decision of the Council, said: I have to announce that William Shaw, having been proved to have been convicted of divers misdemeanours alleged against him in the notice of inquiry, the Registrar has been directed to erase his name from the Medical Register.

The Council then considered the case of Harry Robert Emms, registered as of 132, Winson Green-road, Birmingham, Mem. R. Coll. Surg. Eng. 1896, Lic. R. Coll. Phys. Lond. 1896, who was summoned to appear before the Council on the following charge as formulated by the Council's solicitor:—

That you were on June 16th, 1909, convicted at the Cambridge Borough police-court of having on May 29th, 1909, feloniously stolen a bicycle belonging to one Debendra Mohan Bose, and on June 7th, 1909, of having feloniously stolen a New Chesterton bicycle belonging to one Alfred Conway, and a Standard Triumph bicycle belonging to one Thomas James Mudd.

Mr. Emms did not attend.

The PRESIDENT, in intimating the finding of the Council, said: I have to announce that Harry Robert Emms having been proved to have been convicted of the felony alleged against him in the notice of inquiry, the Registrar has been directed to erase his name from the Medical Register.

The last case was that of James Alexander Pettigrew registered as of 11, Lowther-street, Whitehaven, Cumberland, "in practice before July 22nd, 1878."

The Dental Committee to whom the case was referred found that the following facts were established by the evidence:—

That on Jan. 4th, 1909, the said James Alexander Pettigrew was convicted at the Lancaster Quarter Sessions of unlawfully and wilfully neglecting certain children under the age of 16 years in a manner likely to cause them unnecessary suffering and injury to their health, and was sentenced to six months' imprisonment with hard labour. The evidence before the Committee consisted of the certified copy of the said conviction.

The PRESIDENT, in delivering the decision of the Council, said: I have to announce that James Alexander Pettigrew having been proved to have been convicted of the misdemeanour alleged against him in the notice of inquiry, the Council has directed the Registrar to erase from the Dentists Register the name of James Alexander Pettigrew.

*The Apothecaries' Hall, Dublin.*

The report by the Examination Committee on the report of the final examination of the Apothecaries' Hall, Dublin, held in January, by the assistant examiners in surgery (Sir Lambert H. Ormsby and Professor Conway Dwyer), was received.

Dr. MCVAIL moved that the report on the final examination of the Apothecaries' Hall held in April should likewise be received and entered in the minutes.

The Examination Committee mentioned in the report that the assistant examiners were satisfied with the manner in which the examination was conducted, and they (the assistant examiners) considered the standard of proficiency in medicine, surgery, midwifery, and ophthalmology required from the different candidates was searching and sufficient in every detail. The Examination Committee drew attention to a case in which a candidate was exempted in a subject of medicine in the final examination on the ground that he had passed in it elsewhere. Some correspondence had passed between the registrar and the authorities of the Apothecaries' Hall, Dublin, on the subject. A part of that correspondence was included in the report. Mr. H. E. Allen, the registrar of the General Medical Council, in the course of a letter pointed out it did not appear to be permissible to exempt the candidate in a subject in the Final Examination. Mr. Henry W. Mason, the secretary and registrar of the Apothecaries' Hall, in replying stated that "when the candidate made application for admission to our Final Examination he requested exemption in Midwifery, having already passed in this subject elsewhere. Before acceding to his request, being ourselves doubtful on the point, we wrote you on 2nd of October, 1908, for definite information on the point of exemptions. Your reply of October the 3rd was very full and explicit, stating that there was no rule on the subject, and consequently the candidate was admitted to Examination and allowed the subject. We therefore hold ourselves blameless in the matter, and would not have acted as we did save and except for your reply." The Examination Committee in their report quote from the minutes a similar case in 1903, where it is stated that the recognition of a final subject passed before a different licensing body is quite irregular, in view of the opinion expressed by the Council's legal adviser, that "the Examination must be one Examination, in the sense that one Medical Authority or combination of Authorities must conduct the whole Examination of the Candidate; that is, that he must be examined in all three subjects by one Medical Authority

or combination of Authorities." The report concludes as follows:—

The Examination Committee regrets that again a procedure should have been adopted by the Apothecaries' Hall which in the opinion of legal counsel is illegal. The Examination Committee is of opinion that the Council should draw the attention of the Apothecaries' Hall to the opinion given by the Council's legal adviser regarding what constitutes a Qualifying Examination. The Committee is further of opinion that the Council should call the attention of all the Licensing Bodies to this opinion. The Committee regards the Reports of the Assistant Examiners to the Apothecaries' Hall as not sufficiently full and definite, and it suggests that in future the Assistant Examiners be supplied with a form of schedule to be filled in by them in the case of each candidate.

Dr. ADYE-CURRAN took objection to the reception of the report on the ground that the full replies of the authorities of the Apothecaries' Hall were not included in the correspondence. In conclusion, he moved as an amendment:—

That the report of the Final Examination of the Apothecaries' Hall of Ireland be again postponed till the May session, in order that the remarks of the body concerned may be added.

Dr. MCMANUS seconded.

The debate was adjourned and the Council rose.

SATURDAY, NOV. 27TH.

The Council resumed its sittings to-day. Sir DONALD MACALISTER was again in the chair.

*The Apothecaries' Hall, Dublin.*

The debate was resumed on Dr. Adye-Curran's amendment to Dr. McVail's motion with regard to the report on the Final Examination of the Apothecaries' Hall, Dublin.

Dr. MCVAIL reviewed at some length the matters dealt with in the report. The Council, he said, was responsible for having things done according to law, and he did not think that the report should be postponed at all.

Dr. ADYE-CURRAN maintained that everything that had been done by the Apothecaris' Hall, Dublin, had been done *bonâ fide*. There had been a mistake. For years past there had been every endeavour on the part of the Hall to fall in with the wishes and decrees of the Council in every possible way.

Sir HENRY MORRIS asked whether there was any objection to the report being postponed for six months. It might be desirable if the matter were important to have the remarks of the body concerned.

Dr. MCVAIL read the correspondence which was not printed in the report.

Dr. ADYE-CURRAN withdrew his amendment on the understanding that this correspondence would be included in the minutes.

The motion to receive the report was agreed to.

Dr. MCVAIL then moved that the Council should express approval of the following paragraph in the report:—

The Education Committee regrets that again a procedure should have been adopted by the Apothecaries' Hall which in the opinion of legal counsel is illegal.

Dr. NORMAN WALKER seconded.

Dr. ADYE-CURRAN considered that the motion was rather severely worded. The Hall was not to blame. The Council had made a mistake.

The motion was carried by by 19 votes to 4. Four members did not vote and seven were absent.

The three other paragraphs in the conclusion of the report were adopted.

*Apothecaries' Hall, Dublin: Preliminary Examination.*

Dr. MACKAY, chairman of the Education Committee, submitted the following report:—

The Committee, having considered an application from the Apothecaries' Hall, Dublin, regarding the recognition of its preliminary examination, passed the following resolution: "That the application be refused, and that for the reasons the applicants be referred to the decision of the Council as reported in the minutes for 1894 and 1908."

In moving the adoption of the report, Dr. MACKAY said the committee believed that it was not right that a body which was concerned purely with medical education should conduct a preliminary examination in general education. Such an examination should be conducted only by a body which was in close touch with the general education of the country and never by a body whose sole interest in such an examination was the admission of students to the medical curriculum. The committee wished in no way to discourage the legitimate efforts the Apothecaries' Hall were making in Ireland. If there were difficulties in their way now was the time that a serious effort should be made to remedy these difficulties in a proper manner. They had now in Ireland new universities, and it would be a very proper thing if all the bodies in Ireland concerned were to get from the new universities a preliminary examination in general education conducted by an impartial body representative of them all. He trusted the action of the Council would have the result of bringing about the establishment of a general educational body in Ireland which would do for that part of the kingdom what similar bodies were doing in other parts of the country.

Dr. ADYE-CURRAN maintained that the Apothecaries' Hall was obliged under Act of Parliament to hold these examinations. No man could be admitted as a licentiate of the Apothecaries' Hall unless the directors satisfied themselves of his proficiency in general education. In that way the Apothecaries' Hall differed from other bodies. They had a perfect right to hold these examinations.

The PRESIDENT pointed out that such recognition by the General Medical Council would mean the endorsement of the examinations for every body besides the Apothecaries' Hall whether they liked it or not. What Dr. Adye-Curran had said was irrelevant to the main question. There was nothing to prevent the Apothecaries' Hall starting any examination they liked so long as it was for their own consumption.

On a vote the report was adopted by 27 votes to 1.

*Dental Registration.*

Mr. TOMES moved the reception and adoption of a report from the Dental Education and Examination Committee in regard to an application from Mr. H. M. McNeill for dental registration. The report stated that on Jan. 20th, 1909, an application for registration in the colonial list of the Dentists Register was received from Mr. H. M. McNeill on the ground that he possessed the L.D.S. diploma of New Zealand and the D.D.S. of the University of Toronto. The application was refused. Mr. McNeill appealed to the Privy Council, and on June 20th the Privy Council was informed of the grounds upon which the refusal was based. The report entered at length into an explanation why the committee considered that the possession of the diplomas tendered was not sufficient in its view for the registration which was applied for. Mr. Tomes mentioned that the Council had always held itself entitled to inquire into the circumstances of colonial registration.

Dr. KNOX seconded.

The motion was agreed to.

*The Pharmacopœia Committee.*

On the motion of Sir JOHN MOORE the report of the Pharmacopœia Committee was received. The report was as follows:—

From May 23rd to Nov. 22nd, 1909, the number of copies of the British Pharmacopœia (1898) sold by the publishers was 578. The total number of copies sold in the year beginning Nov. 23rd, 1908, was 1060. The annual demand for the existing Pharmacopœia thus appears to remain steady. Up to the present time 41,366 copies of the Pharmacopœia and 4458 copies of the Indian and Colonial Addendum have been sold. The stock now in hand consists of 1664 copies of the Pharmacopœia, together with 1876 copies of the Addendum.

The committee met on Oct. 22nd and 23rd and considered in detail the suggestions made by the licensing bodies and other medical authorities at home and abroad for the improvement of the Pharmacopœia, with a view to its forthcoming revision. Provisional decisions were arrived at concerning the omission or inclusion of particular drugs and preparations. On a number of points it appeared that further inquiries were necessary before definite conclusions could be reached. Meanwhile the committee has resolved that the matter now included in the Indian and Colonial Addendum, or such part of it as after due revision is retained, shall be incorporated with the text of the next Pharmacopœia. In this way practitioners and pharmacists throughout the empire will be provided with a comprehensive British Pharmacopœia in one volume, in which due account is taken of local conditions and requirements.

*Students' Registration.*

On the motion of Sir HUGH BEEVOR, the report of the Students' Registration Committee was received.

*The Anæsthetics Committee.*

The PRESIDENT moved the reception of the report of the Anæsthetics Committee, which was appointed on May 29th, 1909,

To consider the proposals for legislation on the subject of anæsthetics which have been or may hereafter be put forward, and to report to the Council on the position of the subject at the November session.

The committee had before them the Anæsthetics Bill, 1909, the text of which was printed in the report.

After careful consideration of this Bill and of other

communications on the subject which had been placed before them, the committee came to the following conclusions:—

1. That the statutory powers with regard to medical education exercised by the Council, and in case of need exercisable by the Privy Council, are sufficient to secure that candidates for medical or dental qualifications shall have received adequate practical instruction in the administration of anæsthetics, and that the Council has already taken steps, and is prepared to take further steps, to secure the end in view.
2. That it is inexpedient to provide by Act of Parliament that evidence of such instruction should be raised to the status of an "additional qualification," without which no person shall be entitled to registration.
3. That in the exercise of its statutory powers with regard to medical education the Council is enabled to take account from time to time of the advances of medical science in regard to the methods of procuring anæsthesia, and to vary its recommendations to the licensing bodies accordingly, in a manner which would not be practicable under the terms of the proposed Bill, should that pass into law.
4. That it is desirable in the public interest that the administration of anæsthetics for the purpose of inducing unconsciousness or insensibility to pain during medical, surgical, obstetrical, and dental operations or procedures should be restricted by law to duly qualified medical practitioners, due provision being made for the practical instruction of students, and for cases of emergency.
5. That having regard to existing conditions it is also desirable in the public interest that duly qualified dental practitioners should be authorised to administer certain specified anæsthetics, such as nitrous oxide gas, for the purpose of inducing unconsciousness or insensibility to pain during dental operations or procedures.
6. That the specification of the anæsthetic substances or drugs which may thus be employed by duly qualified dental practitioners during dental operations or procedures should be made in a schedule to the proposed Act of Parliament, power being reserved to the Privy Council on the recommendation of the General Medical Council as the authority charged with the publication of the British Pharmacopœia, to add to or vary the specified list from time to time as occasion arises.
7. That it is expedient in the public interest to provide that the person who administers the anæsthetic for the purpose of inducing unconsciousness during any medical, surgical, or dental operation or procedure should not be the person who performs the said operation or procedure, due provision being made for cases of emergency.
8. That it is inexpedient to create, as proposed in Clause 4 of the Bill, a new penal offence the precise nature of which is not defined, inasmuch as the words "dying while under the influence of an anæsthetic" are capable of several interpretations, varying with the circumstances of each particular case.
9. That if it should be deemed desirable to make provision for duly recording the cases contemplated in Clause 4, a system of notification to the proper authorities, similar to that which is applicable to births, or to infectious diseases, would be sufficient for the purpose.
10. That for the present it should be left to the licensing bodies to determine the precise form of the evidence of "adequate practical instruction in the administration of anæsthetics," which they require to be produced by candidates for their medical or dental qualifications.
11. That the following addition should be made to the Council's recommendations on dental education and examination, namely:—
"(v) (*c*) Administration of the anæsthetics usually employed in dental practice."

The committee recommended that the foregoing conclusions should be adopted by the Council and transmitted to the Lord President of the Privy Council for his information.

Sir C. BALL seconded.

The motion was agreed to.

The PRESIDENT, in reviewing the conclusions in the report, said that the committee was satisfied that the powers already possessed by the Privy Council were sufficient to allow steps to be taken from time to time to insure that the medical or dental student should be duly instructed in the practical administration of anæsthetics. Therefore an Act of Parliament on this point was unnecessary. The committee believed that the machinery of the General Medical Council was capable of being adapted from time to time. That was better than an Act of Parliament. Conclusion 4 was an important one. With regard to Conclusion 5, the committee had had some trouble in deciding whether the anæsthetics should be specified. The method of meeting the difficulty which the committee had suggested was to allow the Privy Council, on the recommendation of the General Medical Council, to vary the specified list. Further, he thought that the Council had an interest in seeing that the anæsthetist and the operator should be distinct. The danger was greatly minimised when the anæsthetist had his attention wholly directed to his own duties. Clause 4 of the Anæsthetics Bill laid down that "any registered medical practitioner who gives a certificate of death in the case of any person dying while under the influence of an anæsthetic should be liable, on summary conviction, to a penalty not exceeding five pounds." The committee thought it proper that the Council should protest against the creation of a new offence. If it was desired to deal with this matter he thought that it could be done by a system of notification. The committee considered that it was undesirable for the Council to lay down a definition with regard to the "adequate practical instruction in the administration of anæsthetics" which should be required of candidates for their medical and dental qualifications. The duty of the Council would be discharged in impressing on the licensing bodies the necessity for efficient instruction. Further, the committee thought it highly necessary that dental practitioners should have adequate practical instruction in anæsthetics. He concluded by moving in turn the adoption of the conclusions of the report.

On conclusion 5, Dr. KNOX urged that it should be made perfectly clear that the practical instruction of dental students in the use of anæsthetics was desirable. He accordingly moved to add to the conclusion, "and that due provision should be made for the practical instruction of dental students."

This was agreed to.

All the conclusions were adopted.

Sir C. BALL remarked that the Anæsthetics Committee had performed admirable work.

*Application for Registration.*

The Council considered an application for registration by Mr. Alfred Alexander Donald McCabe-Dallas, Lic., Lic. Midwif. 1881, R. Coll. Phys. Irel., a medical practitioner entitled to be registered under the Medical Act (1858), but who neglected to effect such registration until after the "appointed day" (June 30th, 1887), under the Medical Act (1886). The application was duly considered by the English Branch Council on Nov. 24th, 1909, when the following resolution was passed:—

That the Branch Council recommends to the General Council that Mr. Alfred Alexander Donald McCabe-Dallas be registered.

The application was granted.

*The End of the Session.*

This concluded all the business on the agenda.

On the motion of Dr. NORMAN MOORE the President was thanked for his services in the chair.

The Council then adjourned until May, 1910.

## THE JOHN HERBERT WELLS FUND.

THE following is the fifth list of subscriptions to the John Herbert Wells Fund. Further contributions will be gratefully received by the Earl of Dalhousie and Mr. Julian G. Lousada, honorary secretaries and treasurers of the fund, at 16, Old Broad-street, E.C., or by ourselves at this office:—

| | £ | s. | d. |
|---|---|---|---|
| Nocumenta Documenta | 25 | 0 | 0 |
| Miss Bazley ... ... ... | 25 | 0 | 0 |
| A Friend ... ... ... ... | 15 | 0 | 0 |
| Messrs. Hammerton and Co., Ltd. ... ... ... | 12 | 12 | 0 |
| Sir John F. H. Broadbent, Bart., M.D. ... | 10 | 10 | 0 |
| Mr. W. Strang Steel ... | 10 | 0 | 0 |
| Sir Alfred Fripp, K.C.V.O. | 5 | 5 | 0 |
| J. G. C. ... ... ... ... | 5 | 5 | 0 |
| Mr. Walter S. Cohen ... | 5 | 5 | 0 |
| Miss FitzPatrick ... ... | 5 | 0 | 0 |
| A. T. T. ... ... ... ... | 5 | 0 | 0 |
| Anonymous ... ... ... | 5 | 0 | 0 |
| I. F. ... ... ... ... ... | 5 | 0 | 0 |
| Mr. A. C. Ionides, jun.... | 5 | 0 | 0 |
| Miss Ethel Charles... ... | 5 | 0 | 0 |
| Mrs. M. Lehmann ... ... | 5 | 0 | 0 |
| Mr. H. Rawle ... ... ... | 3 | 3 | 0 |
| Mrs. K. Bacon ... ... ... | 3 | 0 | 0 |
| Messrs. John Aird and Son ... ... ... ... ... | 2 | 2 | 0 |
| Messrs. Fremlin Bros. ... | 2 | 2 | 0 |
| Mr. F. Fremlin ... ... | 2 | 2 | 0 |
| Messrs. Samuel Hanson and Son ... ... ... ... | 2 | 2 | 0 |
| Mr. Julius Bernstein ... | 2 | 2 | 0 |
| Mr. Walter Harter... ... | 2 | 2 | 0 |
| Mr. Herbert Smale... ... | 2 | 2 | 0 |
| Mrs. Irving ... ... ... | 2 | 2 | 0 |
| Mr. W. Errington ... ... | 2 | 2 | 0 |
| Dr. Bruce Porter ... ... | 2 | 2 | 0 |
| Professor George Murray | 2 | 2 | 0 |
| Rev. L. Goodenough ... | 2 | 2 | 0 |
| Mr. T. Rawling Bridgwater ... ... ... | 1 | 10 | 0 |
| Mr. A. Aste ... ... ... | 1 | 1 | 0 |
| Messrs. R. H. Jenner and Sons ... ... ... | 1 | 1 | 0 |
| Mr. R. May ... ... ... | 1 | 1 | 0 |
| Mr. Harry Rathbone ... | 1 | 1 | 0 |
| Mr. H. Sneath ... ... | 1 | 1 | 0 |
| Mr. F. T. Stanley ... ... | 1 | 1 | 0 |
| Dr. G. Stone ... ... ... | 1 | 1 | 0 |
| Mr. R. C. Irving ... ... | 1 | 1 | 0 |
| Mr. F. G. Ivey ... ... | 1 | 1 | 0 |
| Messrs. Younghusband, Barnes, and Co. ... ... | 1 | 1 | 0 |
| Mr. G. L. Lepper ... ... | 1 | 1 | 0 |
| Mr. W. Hunting ... ... | 1 | 1 | 0 |
| Mr. F. Percival ... ... | 1 | 1 | 0 |
| C. S. ... ... ... ... | 1 | 1 | 0 |
| Mr. W. I. Thatcher ... | 1 | 1 | 0 |
| Dr. C. G. Havell ... ... | 1 | 1 | 0 |
| Dr. C. D. B. Hale ... ... | 1 | 1 | 0 |
| Mr. John Alexander ... | 1 | 1 | 0 |
| Mr. R. N. Hooper ... ... | 1 | 1 | 0 |
| Colonel and Mrs. Aubrey Maude ... ... ... ... | 1 | 1 | 0 |
| Mr. J. Sholto C. Douglas | 1 | 1 | 0 |
| Lieutenant-Colonel P. G. Huggins... ... ... ... | 1 | 1 | 0 |
| Mr. A. A. Beedle ... ... | 1 | 1 | 0 |
| Dr. J. F. Glynn ... ... | 1 | 1 | 0 |
| Mr. E. S. Sinnott ... ... | 1 | 1 | 0 |
| Nurse Phillips ... ... ... | 1 | 1 | 0 |
| Dr. A. H. Spicer ... ... | 1 | 1 | 0 |
| Dr. C. Russ ... ... ... | 1 | 1 | 0 |
| Mr. W. Thirlwall Bayne | 1 | 1 | 0 |
| Staff-Surgeon S. I. Reid, R.N. ... ... ... ... | 1 | 1 | 0 |
| Colonel Tipping ... ... | 1 | 1 | 0 |
| S. M. L. ... ... ... ... | 1 | 1 | 0 |
| Dr. W. D. Halliburton | 1 | 1 | 0 |
| A Doctor's Widow ... ... | 1 | 1 | 0 |
| Anonymous (Paddington) | 1 | 0 | 0 |
| Mr. C. W. B. Fernie ... | 1 | 0 | 0 |
| Mr. Charles Pace ... ... | 1 | 0 | 0 |
| Messrs. Lepper and Sons | 1 | 0 | 0 |
| Mr. James Todd ... ... | 1 | 0 | 0 |

# THE LANCET.

*LONDON: SATURDAY, DECEMBER 11, 1909.*


## The General Medical Council: Proposed Legislation on Anæsthetics.

WE complete this week our report of the proceedings of the November session of the General Medical Council, a very brief session this year, extending only over five days. But, as we have frequently pointed out, the work done by the General Medical Council at its public sessions must not be taken as a gauge, for the labours of the numerous committees, as well as the proceedings of the Branch Councils, have to be added to the sum of its industry. The brevity of the session was largely accounted for by the fact that the discussions on the penal cases were not prolonged, a fact of which the treasurer of the Council must be profoundly glad, for it is in the necessity to make thorough inquiry into all such cases that the risk to the funds of the Council lies. Two matters of outstanding importance were, however, dealt with by the Council in its short session—viz., the arrangement of the subjects of the medical curriculum, and the proposed legislation on the administration of anæsthetics. With regard to the first matter we need only record the decision at which the Council arrived, inasmuch as the various preliminary proceedings have been recently summarised in our columns in a series of articles, while the actual debate upon what is known as the "block system" will be found fully reported in our columns this week and last week. The net result of a most interesting debate was summed up in a resolution moved by Sir HENRY MORRIS, that the regulations apportioning the student's time between preliminary and final subjects should be so framed as to ensure that the study of the final group of subjects should extend over not less than two years after the passing of the examination in anatomy and physiology. It will thus be seen that the principle of the "block" was at length decided upon, the only alteration in Sir HENRY MORRIS'S resolution being that the two years were later defined as 24 months.

The attitude of the General Medical Council upon the proposals for legislation with regard to anæsthetics was very clear. The Anæsthetics Committee of the Council, after careful consideration of the proposals for legislation, came to the definite and, if we may say so respectfully, adroit conclusions which will be found fully printed on page 1754 of this issue of THE LANCET. These conclusions were adopted by the Council and have been transmitted to the Privy Council for its information, while the Departmental Committee of the Home Office which is now sitting to consider the Coroners Acts, and which has the whole question of new legislation upon anæsthetics before it, will also benefit by them. The meaning of the conclusions which have been adopted by the General Medical Council is that the Council approves of legislation on the administration of anæsthetics in certain directions, although it expresses confidence in its own statutory powers with regard to medical education as being sufficient to secure that candidates for medical or dental qualifications shall receive adequate practical instruction in the administration of anæsthetics. The important things are that the Council has endorsed the following findings of its Anæsthetics Committee:—

(4) That it is desirable in the public interest that the administration of anæsthetics for the purpose of inducing unconsciousness or insensibility to pain during medical, surgical, obstetrical, and dental operations or procedures should be restricted by law to duly qualified medical practitioners, due provision being made for the practical instruction of students, and for cases of emergency.

And—

(7) That it is expedient in the public interest to provide that the person who administers the anæsthetic for the purpose of inducing unconsciousness during any medical, surgical, or dental operation or procedure should not be the person who performs the said operation or procedure, due provision being made for cases of emergency.

Upon the point where the greatest discussion has so far arisen—viz., the position of the dentists with regard to the administration of certain specified anæsthetics—the Council approves the conclusion that having regard to existing conditions it is desirable in the public interest that duly qualified dental practitioners should be authorised to administer certain specified anæsthetics, such as nitrous oxide gas, for the purpose of inducing unconsciousness or insensibility to pain during dental operations or procedures. It was a certainty that the General Medical Council would not support the interference with accepted dental practice that would have been implied in the prohibition of the qualified dentist to use gas. It seems to us that the General Medical Council owes a great debt to its Anæsthetics Committee for a valuable set of conclusions, and is to be congratulated on adopting them *in toto*. Every single conclusion is not calculated to please everybody, but the General Medical Council meets the position fairly by advocating measures which would maintain the rights of the medical profession as a whole, infringe nowhere those enjoyed by any section of the profession, and furnish distinct degrees of protection to the public.

## The Classification of Odours.

LEAST cultivated of all senses perhaps is the sense of smell. There are those who contend that if the subject had received the same attention as have the senses of hearing and sight the study of odours would have reached the scientific plane of optics and acoustics. We classify sounds and colours easily enough, though the methods and results are open to criticism, but we can lay little claim to having set up a scientific division of odours. Is there anything more difficult to describe than a smell? We can say that it is penetrating, persistent, pleasing, or offensive, as the case may be, but these are all adjectives which do not necessarily single out or enable anyone to recognise the particular smell which we wish to describe. In our difficulty we dismiss the description of a smell by

saying that "it is peculiar." Whilst that is true it conveys nothing, as is pointed out in a suggestive letter in another column from Mr. MORRIS J. WILLIAMS. The most that we can say is that a certain odour recalls the odour of another substance with which everybody is familiar. We set up, in a word, an odd assortment of smelling substances with which comparisons may be made. We must refer to a well-known smell before we can give any idea of one that is fresh to us. It reminds us, we constantly say when asked to give a description of a novel odour, of roses, of cinnamon, of rotten eggs, of camphor, of earth, of pine, of pigs, of sweat, and so forth, according to the impression which we receive. Such a description can only appeal of course to the person to whom these odours are familiar. But it would be difficult to convey the slightest idea of the smell of (say) the skunk to anyone who has not encountered the emanation of that animal, though once it has been experienced it can never be forgotten, so strong is the impression which it leaves. A sickening sweet repulsive odour is almost all we can say of it, unless we add that it is partly like bad eggs and partly like valeric acid (osmidrosis), when we at once mention a thing which need not be more familiar than the odours of the skunk. It is different in the case of colour, for no one is bound to say, to quote an example, that the sun went down the colour of yelk of eggs or of geranium blossom so long as the distinctive terms yellow and red are understood, while any shade of yellow or red can probably be compared to the colour of some familiar object like the lemon, the brick, or the tomato. The fact is that the classification of smells is rude and unscientific. There are scents more or less attractive and there are stinks repulsive, and between the lines of that broad differentiation we stand nearly still. Further, there is the difficulty that, broad as the differentiation is, there is not always a consensus of opinion to be found as to whether an odour is pleasant or offensive. The odour of turpentine, for example, is acceptable to some persons, but excites disgust in others, and individuals are known to whom such odours as those of carbon disulphide or of sulphuretted hydrogen are a delight. Such an appreciation, however, having regard to the opinions of the majority, is probably based on a perverted instinct, but who in this matter can decide what is the normal impression? It is reasonable to suppose, further, that smells are subjects of favouritism, just as are sounds and colours and their combinations.

That the sense of smell is capable of extreme refinement is evident from the perfection which it reaches in some animals, of which the dog may be quoted as a familiar example. There can be little doubt that certain animals have a remarkable power of differentiation and recognition by their keen sense of smell, but it is questionable whether the same sense, with exceptions possibly, is ever developed so highly in the human being. It is, in fact, not improbable that in the human individual the sense of smell is, as a rule, a dull one, and possibly incapable, therefore, of the scientific differentiation which has taken place in the case of hearing and sight. Nevertheless, certain attempts have been made to place the sense of smell in the same category as the senses of hearing and seeing by assuming that odours affect the nervous system by special vibrations just as the ether vibrations effect the eye, and air vibrations affect the ear. Perfumers, for example, speak of a gamut of odours, placing the name of the odour in a position corresponding to its effect upon the olfactory sense, in the order of its amplitude of vibration; and many years ago Dr. SEPTIMUS PIESSE set out a series of odours in parallel with a musical scale, and showed how it was possible to make a bouquet correspond to a chord. Thus, "if a perfumer desires to make a bouquet from primitive odours he must take," he said, "such odours as chord together; the perfume will then be harmonious." According to this classification he found that the chord, say, G G D (bass) F G B (treble), gave a bouquet of chord G, pergelaria corresponding to the first G in the bass, sweet-pea to the next G, violet to D, tuberose to F, orange flower to G, and southernwood to B, the comparison of odour to note being made by a personal estimation of the amplitude of vibrations. Similarly a bouquet of chord C was made up of santal, geranium, acacia, orange flower, and camphor (C C E G C), and a bouquet of chord F consisted of musk (F), rose (C), tuberose (F), tonquin bean (A), camphor (C), and jonquil (F). It is evident that this classification suggests octaves of odours, and we are reminded of the law of octaves in light, sound, and chemistry. In Dr. PIESSE'S gamut of odours we find, for example, at the lower end of the scale the note B corresponding to clove, and the octave B above gives stocks and pinks, and the higher octave B cinnamon. The keen sense of smell will recognise a similarity of odours here, just as the musician recognises the musical octaves. Other examples of analogy could be given which show an interesting relationship where a keen faculty of recognition exists between odours and sounds, and we are led to wonder how far we are merely the subjects of vibrations produced in different ways which now affect the eye, now the ear, and now the nose, and so forth. Why, however, some vibrations soothe while others irritate it is difficult to say, but certain it is that sounds can be bad as can colours and odours. There are discords and harmonies, beauty and ugliness, stinks and fragrance. It is just possible that, by the further study of odours, they may ultimately receive some such scientific divisions as do sounds and colours. Mr. WILLIAMS, whose communication has prompted these observations, makes a suggestion which may afford a useful starting point. He proposes a preliminary classification of the primary odours, selecting such bodies as (1) ammonia; (2) sulphuretted hydrogen; (3) bromine; (4) valeric acid (5) ether; (6) menthol; (7) camphor; (8) artificial musk; and (9) nitro-benzol. Assuming that the category and its members are well chosen, the next thing to be done would be to find a name for each of these odours, apart from the names of the substances. This name would then be generic in character and capable of being applied to a number of substances, just as red is applied as the distinguishing colour of sunset, fire, bricks, blood, and so forth. On the ready acceptance by the unscientific public of these generic names—that is, on a widespread feeling that each generic name characterises naturally the class of smell

to which it is attached, would popular adoption of such a scheme depend.

The difficulties of making a classification of odours are thus seen to be great. We know how the vibrations of sound and light are set up and how they are conveyed, but in the case of odours we do not know with any certainty the origin of the wave or the method of its transmission. Apparently, the presence of oxygen or air seems to be necessary before the sensation of smell can be experienced, and the same process of communication, whatever it may be, is probably at work when the palate is responsive. There is room here for much research, and the subject is of considerable practical importance, since so many of the creature comforts of this life obtain a valuation based upon their æsthetic qualities which are chiefly that of flavour and aroma. A penny cigar may be all genuine tobacco, but it does not, as a rule, afford the same degree of gratification to a smoker that an expensive Havana cigar does, nor does the haddock give the palate the same satisfaction as the turbot. Æsthetically speaking, calves' head is an appalling substitute for turtle, but from a dietetic point of view there is probably little difference between them. Similarly, elegance is sought after in wines, but there is very little difference between the chemical composition of a *vin ordinaire* and a Château Lafite. We pay much for a satisfactory appeal to the eye, the ear, the nose, and the palate, and all medical men know that to do so is good sense and not sensuality. A classification of odours would be of distinct value to medical men both in debate among themselves and in their relations with their patients.

## Medical Parliamentarians.

ALTHOUGH we are able to disassociate ourselves entirely from party politics, it is our duty to follow with the closest attention the doings both of the House of Lords and the House of Commons. Those Parliamentary proceedings which immediately concern the physical and moral health of our countrymen or directly affect the welfare of the medical profession may seem to interest us most deeply, but such are the ramifications of medicine to-day that there is hardly a Bill brought forward or a policy advocated in which some medical bearing may not be detected, in which medical interests are not involved. It is therefore desirable that a certain number of medical men should be returned to the House of Commons, so as to keep the legislature informed of the right scientific view on an enormous number of points, and there can be no fear that the return of such men would lead to any infringement of popular rights in deference to the views of special pleaders. A medical Member of Parliament, though the most accomplished speaker in the profession, and even in the House, can hardly hope that he will find the opportunity to persuade the legislature immediately to proceed penally against unqualified practice or to pass hastily any other measure which might have the complexion of class protection. But his presence can make itself felt, as can the influence of all earnest medical parliamentarians. By work on Committees, by personal intercourse with their fellow Members, and by availing themselves of proper opportunity of debate, medical Members of Parliament may diffuse a knowledge of the high ideals of preventive medicine and of the real public danger of unlicensed quackery in such a manner that men of party influence, and even Cabinet Ministers, may feel constrained to adopt at least something of the medical point of view. It cannot be doubted that the position of the President of the Local Government Board, acting as he does as the Minister of Health, is considerably strengthened by the presence of a few medical men in the House, especially when he finds it his duty to legislate against some insanitary but profitable trade. This being the case, a medical candidate for Parliament, if in other respects than in his calling he be the right sort of man, is always worthy of the suffrages of medical practitioners, and the question has to be considered seriously whether such a candidate might not well be supported by his professional brethren irrespective of his political party, and whether, provided he would give them a pledge to use his best endeavours in the House of Commons in the cause of medicine and of public health, he might not be frankly adopted by medical men. We do not put forward this view with any great approval, for medical men are citizens first and practitioners afterwards. To ask a voter, because he is a medical man, to give his vote to a medical candidate who thinks completely differently from himself on important constitutional questions is unreasonable. It can be claimed for medical men that their ideals are progressive and altruistic in a way that the ideals of no other professions are, upon which it follows that if a medical candidate is representative of professional views he is a good candidate whichever side of the House he may elect to sit. It does not follow that a voter having strong political convictions should sink them to return a medical candidate, for the general considerations must come before the particular. But where a medical man's vote as a citizen can assist a medical candidate especial energy should be put into the process.

# Annotations.

"Ne quid nimis."

## MOTOR ACCIDENTS IN LONDON.

WE observe that recently a medical man, Dr. T. Woulfe Flanagan, was publicly thanked by the magistrate sitting at Bow-street police court for coming forward to give evidence in a case in which the driver of a taxicab had knocked down two road-cleaners by driving recklessly on the wrong side of a street refuge. A fine of £3 was inflicted on the defendant as, apparently, there had been no previous complaint against him, and a like punishment was awarded to another man who was convicted and sentenced on the same day and by the same magistrate for a similar offence. The danger arising from drivers, and not infrequently from cyclists, passing on the wrong side of street refuges in order to save themselves from delay is obvious. The foot-passenger who in crossing a street has reached a refuge instinctively looks to the left, the side from which all traffic moving along the part of the road yet to be traversed should come, but if, trusting to drivers obeying the rule of the road, he neglects to look to his right as well, he

may at any time be run into by a comparatively noiseless vehicle the driver of which is in too great a hurry to adhere to his proper course. In the case in which Dr. Woulfe Flanagan gave evidence the injured men were not ordinary pedestrians, and were not severely injured, but Mr. Curtis Bennett, in commenting on the risk attendant upon passing on the wrong side of refuges, expressed himself as fully alive to the prevalence of the practice, and announced his intention to deal severely with those indulging in it if it were not discontinued. The danger is increased by the ease with which a motor vehicle can be deflected from its course without slackening its speed, a characteristic which renders it a far greater source of risk to the public than a horsed carriage or cart, and this may be observed not only when a motor-car is dodging in and out of the traffic at a street refuge, but even more conspicuously when it turns a corner. Reckless and dangerous hurrying round corners may be seen at almost every spot in London where streets intersect, or lead into, one another. To take a well-known turning as an instance, anyone who walks up the north side of Conduit-street on his way from Bond-street to Regent-street will find as he prepares to cross the end of George-street that motor-cabs and cars travelling towards Hanover-square from Bond-street are tempted by the angle, which happens to be greater than a right angle, to negotiate it at full speed closely shaving the kerbstone. It is quite easy and perfectly safe for them to do so, but extremely dangerous to the unwary pedestrian who may not have looked behind him and is unable to check himself on the edge of the pavement. The mention of Hanover-square reminds us that a fatal accident took place there on the night of Nov. 26th. The verdict of a coroner's jury has since exonerated from blame the driver of the taxi-cab which ran over and killed Mr. W. H. Stallard, a solicitor, and we therefore only refer to the death as illustrating the danger of this class of traffic generally and because on this occasion also a medical man, Dr. David Walsh, gave evidence as an eye-witness of the occurrence. It has additional appositeness, because at the inquest Dr. Walsh informed the coroner's jury that his own care in crossing where the deceased met his death was in a measure due to the fact that a few weeks previously he had himself been run over, with the result that he was still lame. His experience of personal injury and of witnessing the death of another within a few weeks from the same cause, combined with the statistics published recently by the police with regard to street accidents and commented upon widely in the newspapers, should tend to rouse public opinion to the serious and increasing danger from the abuse of their privileges by motor-car drivers. If a census of accident cases due to this cause now being treated in the London hospitals were to be taken it would add some instructive figures. On a recent date, we are informed, no less than nine beds were occupied at St. George's Hospital alone by victims of the horseless carriage, while six more were to be found in the wards at Charing Cross Hospital. It is for the public to protect itself in the matter, and one way in which it can do so is to follow Dr. Woulfe Flanagan's example and to aid the police in their difficult duty of regulating the traffic. We often see charges of all kinds in our police courts criticised as "resting on police evidence only," as if this showed that they were of a trivial character, or had escaped the notice of any but professional witnesses. Members of the public whose position would carry weight before the magistrate are sometimes those most ready to blame both magistrates and police for affording inadequate protection to such as themselves; yet they are the least willing to spend their doubtless valuable time in rendering to the executive that support which it would most gladly welcome. It was mentioned that at the hearing of the first case commented on above the Highways Protection League was represented by counsel watching the case, and the matter is one in which such an organisation can do much by stimulating the energy and public spirit of individuals.

## THE HUXLEY MEMORIAL LECTURE.

Professor Bateson, in his address on Mendelian Heredity which he delivered on Dec. 1st last at Birmingham as the Huxley Memorial Lecture, said that on such an occasion it was natural to look back on the part which Huxley had played in the development of the theory of evolution. Though an enthusiastic advocate of Darwin's views Huxley had always retained an article of faith excluded from the orthodox Darwinian creed. To Huxley it had appeared that the importance of specific and discontinuous variation—mutation, as it is now called—must be far greater than Darwin was disposed to admit. When, some years ago, Professor Bateson published evidence tending to support the mutation theory, it had been no small encouragement amongst much hostility to receive from Huxley a letter of sympathetic approval. And now, said the lecturer, time had provided abundant material justifying Huxley's expectation—indeed, the doctrine of mutation had now more to fear from its uncritical adherents than from direct opposition. The change had come about chiefly through the recognition of Mendel's work and the perception of the processes of heredity and variation thus acquired. Posterity would undoubtedly regard Mendel's discovery as one of the greatest contributions ever made to man's knowledge of nature. The essential fact of Mendelism was that the forms and qualities of living things can in numberless examples be proved to depend on the presence of definite elements or factors, and that those factors are distributed among the germ-cells according to predicable systems, which could be illustrated by reference to a variety of phenomena in plants, animals, and man. From a study of the peculiar mode of transmission of colour-blindness and other "sex-limited" conditions, the conclusion was reached that the distinction between the sexes was determined by Mendelian factors distributed on a definite system. In another respect Mendelism bore on Huxley's views. Huxley had often pointed out that the sterility of hybrids was a serious difficulty in the way of Darwin's theory. The Mendelian method was beginning to show the nature of this sterility, and further inquiry would perhaps completely elucidate it. In certain cases it was possible to suggest the chemical nature of Mendelian factors with some confidence. Professor Bateson's general conclusion that with the progress of this analysis the biological sciences were passing into a new phase will be opposed by no one. His word of warning against the too ready acceptance of violent generalisation made by enthusiasts will be noted, for any attitude of reasonable criticism is sometimes described by Mendelians as fossilised devotion to a scientific scheme laid down by Darwin.

## DISCOVERY OF TASMANIAN SKULLS.

Professor R. J. A. Berry, of Melbourne University, and Dr. A. W. D. Robertson have made a very remarkable and unexpected discovery of skulls belonging to native Tasmanians. Some 33 years ago "Lalla Rookh," the last of her race, died, and with her passed out of existence not only the most primitive civilisation but the most primitively constituted people that anthropologists have any knowledge of. Last year Sir William Turner made an inventory of all the remains known of this race and was able to compile a list of 79 skulls, by far the richest collection being in the museum of the Royal College of Surgeons of England. The many points of resemblance between the

remarkable people who inhabited Europe in palæolithic times—two additional examples of which have been recently discovered in France and largely discussed in the popular press—and the native Tasmanians have made clear to anthropologists that much can be learned of the very earliest inhabitants of Europe by studying the native races of Australia. Hence the importance of Professor Berry's success in collecting from various sources—former burial grounds, private collections, and museums—42 additional Tasmanian skulls, all of which he has good reason to regard as authentic. The description of his collection will occupy some time, but there can be no doubt that the publication of his investigations will provide a valuable welcome addition to our knowledge of a most interesting past race.

## RESEARCH DEFENCE SOCIETY.

THE work of this society is now being widely extended by the formation of branch societies in all parts of the kingdom. The Brighton and Sussex branch have arranged for a public meeting to be held on Monday next, Dec. 13th, at 3 o'clock in the Royal Pavilion, Brighton. Among the speakers will be the Earl of Cromer, President of the Society, and Sir Arthur Conan Doyle, President of the Brighton and Sussex branch. The patrons of this branch are the Duke of Devonshire and Lord Leconfield, and the branch has already a large number of members. We sincerely hope that the work of the Research Defence Society will continue to be well supported by members of the medical profession. The society has already more than 2700 members and more than 100 associates, and is fulfilling a very useful purpose in bringing about a better condition of public opinion as to the objects and the character of experiments on animals, and as to the conditions under which they are made in this country, under the restrictions of the Act.

## ERYTHEMA DUE TO THE APPLICATION OF COWS' MILK.

IN the *Yale Medical Journal* for November Dr. H. M. Steele has reported a case in which the application of cows' milk to the infant skin produced a curious effect. The patient was a female child, aged 6 months. She was a twin whose sister had died from marasmus in the fourth month. She was nursed by the mother for six months, during which she did well except for an attack of mastitis and otitis media in the fifth month, from which she completely recovered. As the mother was worn out from the twin sister's illness and death and had two attacks of influenza, this child was partially weaned, although she was doing well and had gained 12 ounces in the preceding two weeks. She was put on modified fresh cows' milk, which was obtained from a model dairy. After taking about an ounce a bright red rash appeared about the mouth, and on the cheeks where some of the milk had been accidentally spilled. A little later she vomited, but she seemed ill in no other way, and the rash disappeared within an hour. Her father took some milk from the bottle in which the milk was delivered and rubbed it on the baby's forehead. The same rash was produced in about the same time, but lasted only half an hour. Dr. Steele had the milk analysed, but received the report that its constituents were in the proper proportion and that it contained no preservatives. On his own skin it produced no effect and inquiry among many patients taking the same milk did not show any similar case. On the following day the rash was produced both by application of the same milk and of milk from another dairy, but not by the mother's milk. The rash was not produced by ingestion of milk, but only when the milk was spilled and came in contact with the face. There was only slight regurgitation of milk on this day. The lactose was removed from the modified milk mixture, the milk was peptonised, and finally was boiled, but none of these changes made the slightest difference in the production of the rash. The rash at first appeared with perfect regularity about 15 minutes after milk touched the skin, and lasted at first an hour. Then its duration gradually diminished until after 21 days it ceased to appear. The rash was bright red and not raised. Sometimes it was sharply circumscribed; at others it faded with a pink edge to the normal skin. It corresponded exactly to the area touched by the milk. It never resembled urticaria or appeared to cause itching. Dr. Steele does not attempt to explain this curious effect of the application of milk to the skin. It evidently was due to idiosyncrasy to some normal ingredient of the milk. It could not have been due to an abnormal ingredient, for cow's milk from any source produced it. The gradual acquisition of immunity seems to us of considerable interest, and due to the ingestion of the milk. Evidently the administration of the offending ingredient gradually produced tolerance. Dr. A. T. Schofield has recorded in our columns a case of idiosyncrasy to white of egg in which tolerance was similarly induced.[1] The patient was a boy, aged 13 years, who could not eat egg in any form without the production of salivation and profuse urticaria. He was given doses of egg so minute that they produced no symptoms, and the dose was gradually increased until complete tolerance was established to eggs in any quantity. Dr. Steele's case differs from this in the fact that the idiosyncrasy was a local reaction due to local application, not a general reaction due to internal administration. Idiosyncrasy of the former type is much the rarer. Some years ago we discussed a peculiar eruption due to contact of arterial blood with the skin during operations described by Mr. Marmaduke Sheild, which he termed "blood erythema."[2] We concluded that the erythema was an example of idiosyncrasy and was similar to the urticaria produced in some persons by the application of yelk of egg to the skin. The analogy of blood erythema with the milk erythema is obvious.

## NOVEMBER AT HOME AND ABROAD.

IF the figures given below are compared with those for November which were published in THE LANCET a year ago, it will be seen that at all the places represented in the table except those in Italy the mean temperature was lower than during the corresponding month of 1908. The divergence was considerable nearly everywhere, and at Biarritz it amounted to as much as 8°. In these islands the weather was cold for the time of year and also remarkably dry and sunny, the records of sunshine in many localities being about 50 per cent. above the average, and at a few places in the south of England nearly 100 per cent. above. Such a bright November has not been enjoyed in some parts of the kingdom for at least 30 years. In central Ireland and a large part of Scotland the frost experienced between the 15th and 20th of the month was the most severe ever recorded in November in those localities, and the records go back to nearly 40 years. In the central and eastern counties of Scotland the thermometer exposed on the grass descended to about zero, or a few degrees below it, and at Balmoral the screened instrument four feet above the ground fell to within three degrees of zero. London and England generally were milder than Paris, Berlin, and Brussels, and also less rainy, but, as is usually the case in November, the South of France was milder than the mildest part of the United Kingdom, while the southern half of Italy was milder still. At Malta, Algiers, and Palma the mean temperature was almost

[1] THE LANCET, March 7th, 1908, p. 716.
[2] THE LANCET, March 20th, 1897, p. 821.

identical with that generally experienced in July and August in the south and south-east of England. Frost occurred on several occasions on the Riviera and at Biarritz, as well as in Italy as far south as Rome, and it is worthy of note that both Nice and Biarritz registered a lower minimum temperature than London, Brighton, and Weymouth. The temperature after sunset was no higher at Nice than at Scilly, while at Biarritz and Florence it was lower, but those southern resorts enjoyed a warmer day temperature. This was especially the case during the first half of the month, when the sheltered thermometer rose to 55° or above almost every day, and on some occasions went to 60° or beyond. At Biarritz there was also a very warm period about the 20th. The mean diurnal range of temperature was small generally. At Malta and Lisbon it was no greater than 7°, and, owing to the cold days, only 8° at Berlin. At many places on the shores of the Mediterranean it was rather large, and moderate in the south and south-west of England.

| — | Highest temperature. | Lowest temperature. | Mean maximum temperature. | Mean minimum temperature. | Mean temperature for month. | Mean range of temperature. | Number of days with rain. | Total fall in month. |
|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | ° | * | Inches. |
| Scilly ... ... ... | 57 | 36 | 52 | 42 | 47·2 | 10 | 9 | 1·36 |
| Jersey ... ... ... | 58 | 30 | 52 | 40 | 46·1 | 12 | 8 | 2·09 |
| Torquay ... ... | 58 | 32 | 51 | 39 | 44·8 | 12 | 6 | 1·08 |
| Sandown, I.W. ... | 57 | 29 | 50 | 38 | 43·9 | 12 | 7 | 1·35 |
| Weymouth ... ... | 58 | 30 | 49 | 39 | 44·1 | 10 | 3 | 0·77 |
| Bournemouth ... | 57 | 28 | 49 | 36 | 42·7 | 13 | 4 | 0·72 |
| Brighton ... ... | 57 | 30 | 49 | 37 | 42·8 | 12 | 4 | 1·40 |
| Bath ... ... ... | 57 | 25 | 48 | 33 | 40·5 | 15 | 5 | 1·14 |
| Buxton ... ... ... | 52 | 25 | 44 | 34 | 38·9 | 10 | 7 | 1·37 |
| Harrogate ... ... | 55 | 25 | 45 | 35 | 40·2 | 10 | 8 | 1·10 |
| Manchester ... ... | 55 | 27 | 46 | 36 | 41·3 | 10 | 8 | 1·94 |
| Nottingham ... | 56 | 27 | 46 | 35 | 40·7 | 11 | 3 | 0·52 |
| London ... ... ... | 55 | 30 | 48 | 37 | 42·2 | 11 | 4 | 0·66 |
| Paris ... ... ... | 56 | 23 | 45 | 33 | 39·1 | 12 | 8 | 1·19 |
| Berlin ... ... ... | 52 | 21 | 41 | 33 | 37·2 | 8 | 15 | 3·63 |
| Brussels ... ... ... | 55 | 20 | 45 | 33 | 39·1 | 12 | 17 | 1·83 |
| Nice ... ... ... | 66 | 28 | 56 | 42 | 48·7 | 14 | 6 | 2·57 |
| Biarritz ... ... ... | 68 | 28 | 55 | 41 | 48·1 | 14 | 10 | 3·66 |
| Florence ... ... | 68 | 28 | 55 | 40 | 47·6 | 15 | 12 | 3·70 |
| Rome ... ... ... | 70 | 30 | 59 | 47 | 53·0 | 12 | 9 | 4·80 |
| Naples ... ... ... | 69 | 35 | 60 | 50 | 54·8 | 10 | 13 | 4·01 |
| Palermo ... ... | 74 | 38 | 67 | 53 | 59·8 | 14 | 13 | 4·57 |
| Malta ... ... ... | 74 | 49 | 67 | 60 | 63·5 | 7 | 13 | 2·95 |
| Palma (Majorca) ... | 72 | 39 | 65 | 50 | 57·3 | 15 | 11 | 3·13 |
| Algiers ... ... ... | 81 | 46 | 69 | 57 | 63·0 | 12 | 10 | 1·58 |
| Lisbon ... ... ... | 68 | 41 | 60 | 53 | 57·6 | 7 | 18 | 9·22 |

* A day with at least 0·04 inch.

## MOUTH DISINFECTION AND DIPHTHERIA.

RECENTLY we drew attention to the importance of mouth disinfection. This need is particularly felt in ships where men live more closely in association with one another than they do anywhere else. Special attention is given to this risk, we learn by recent publications, in the American and German navies. Dr. J. D. Gatewood in his recent work on "Naval Hygiene," mentions this risk in relation to syphilis, tuberculosis, diphtheria, influenza, pneumonia, measles, mumps, and scarlet fever. There is a special source of danger in the American navy, as drinking cups, used by all, are attached to the ordinary drinking tanks on the living decks of their ships. To obviate risk some of their ships keep these drinking cups lying in a formalin solution, while others have adopted an expensive mechanical device to secure that men shall always drink from running water. In the last sanitary report of the German navy 24 cases of diphtheria are reported, all but 10 of them isolated cases. These 10 occurred in certain messes in a training ship. The patients were at once removed, their plates, knives and forks, and their clothing disinfected. Still cases continued to occur. It appeared likely that the boys who returned from hospital were, in spite of careful mouth disinfection in hospital for a week after recovery, still "carriers," and that they must be infecting the mess utensils. It was decided regularly to boil these mess utensils and to make all members of these messes gargle daily, under supervision, with peroxide of hydrogen. The effect, we learn, was striking—the epidemic ceased.

## THE STANDARDISATION OF DISINFECTANTS.

WE have received a number of communications from manufacturers of disinfectants and others referring to the report of our Commissioners on "The Standardisation of Disinfectants" which appeared in the issues of THE LANCET of Nov. 13th, 20th, and 27th respectively. We, of course, welcome any comments upon our Commissioners' work from those who possess either a theoretical or a practical knowledge of the subject, our single concern being to arrive at the facts of the case. We have handed the various documents to our Commissioners, who, we hope, will deal with them shortly.

## FRACTURES OF THE CLAVICLE.

AN immense amount of ingenuity has been expended in devising methods of treatment for fractures of the clavicle, and Gurlt has recorded some 70 different methods. The mere fact that so many devices have been invented is in itself sufficient proof that the object to be attained is difficult of realisation and it also casts doubt on the efficiency of any of the methods employed. The latest candidate for adoption has been brought forward by Dr. W. F. Westmoreland of Atlanta, Georgia. In the September number of the *International Journal of Surgery* he points out that the clavicle is peculiarly liable to fracture, more than 50 per cent. of a long series of fractures being fractures of this bone. The shape of the clavicle appears to be specially intended to give it elasticity, but the frequency with which the bone is broken shows that this elasticity is hardly sufficient for the purpose, while this same frequency causes us to apologise for recapitulating in the interests of clearness the well-known story of such fractures. In the very large majority of the fractures of the clavicle the injury is produced by indirect violence, the bone breaking about the middle at the junction of the two curves. The direction of the fracture is nearly always oblique, and in the more frequent forms the outer end of the sternal fragment is tilted up and overrides the inner end of the acromial fragment which is displaced inwards, giving rise to very definite shortening. Sometimes the fragments do not separate, the broken ends being turned slightly upwards and backwards so that an angle is formed at the seat of fracture. At the present time Sayre's dressing or some modification of it is the most popular treatment, but it cannot be said to be free from objections, and pain, pressure, and irritation of the skin are the chief. Dr. Westmoreland considers that in Sayre's methods the fracture is rarely reduced, and even when reduction is effected he believes the fragments slip while the dressing is being applied, and even if the reduction has been carried out and the dressing accurately applied in a few days he tells us that displacement occurs anew. Most of the text-books on surgery suggest that

the best and most cosmetic result is attainable by keeping the patient in bed and allowing the arm to fall backwards. We agree with Dr. Westmoreland that such a plan of treatment must be very difficult to carry out, for few people will submit to complete confinement to bed for such an injury, even if the reward be the healing of a fracture without deformity. The method advocated by Dr. Westmoreland is this. The patient is laid on a table flat on his back, the arm lying comfortably by the side; if allowed to remain in this position for even a few minutes the fracture usually reduces itself. The patient is then drawn over the end of the table until the scapula clears it, the patient's head being supported by one hand of an assistant and the back by the other. If the fracture is even now not reduced the arm is slightly abducted and gently pushed a little towards the head and the acromion process is pushed back approximating the scapulæ. This, he claims, always reduces the fracture. With the patient in this position a plaster-of-Paris splint is applied. Before the patient is placed upon the table a closely fitting vest is put on and over it the plaster bandage is wound. The plaster splint should come well down over the ribs so as to support the shoulder without the edge of the plaster on the opposite side of the body pressing into the ribs, which will happen if the body part of the splint is too short. The position of the arm of the injured side is immaterial, but it is better to abduct the arm just enough to allow the bandage to be passed easily under the axilla. Dr. Westmoreland has treated by this method 16 patients, and none has complained of any discomfort, though five of them were sent to him on account of their inability to wear Sayre's dressing. With this splint on children may run and play about as much as they like. The method seems to be deserving of trial.

## AN OUTBREAK OF JAUNDICE WITH SYMPTOMS OF GASTRO-INTESTINAL CATARRH.

THE occurrence of jaundice with fever and gastro-intestinal disturbances in a number of persons at the same time is now well known. It presents several types, varying from simple catarrhal jaundice with fever to the most severe forms of icterus with prostration, acute intoxication, nephritis, destruction of the liver, and death. It appears to be due to an infection of the gastro-intestinal tract, possibly combined with infection of the bile-passages and even of the liver. Its bacteriology is imperfectly known. In the *Johns Hopkins Hospital Bulletin* for October Professor Lewellys F. Barker and Dr. F. J. Sladen have reported a small outbreak which occurred in Baltimore city jail and affected six out of 700 prisoners. Their ages varied from 21 to 29 years. The first patient was taken ill on Nov. 26th with a chill and vomiting. Headache was felt next morning and persisted for a week. During this time he suffered from pain in the abdomen, calves, and hips. Jaundice did not appear until the sixth day and the stools then became acholic and frequent. The second patient was taken ill on Dec. 1st, the third and fourth on Dec. 3rd, the fifth on Dec. 5th, and the sixth on Dec. 9th. The onset was sudden, with chill and headache in three cases. Severe muscular pains occurred in three cases. Nausea, vomiting, diarrhœa, and abdominal pain occurred separately or in combination at one time or other. The jaundice was obstructive in type and appeared on the second, fifth, sixth, and seventh days respectively in four of the cases and on the eighth day in two cases. The liver was enlarged and in some cases the spleen also. Leucocytosis was present and in one case was as high as 23,200; polymorphonuclear neutrophiles predominated. The only other abnormal condition found in the blood was bile in the plasma. Cultures were made from the stools on agar-agar, but showed only the bacillus coli and the ordinary intestinal flora. On picric-acid-brilliant-green agar small opalescent colonies were obtained in the time allotted by Conradi to the typhoid and paratyphoid bacillus, but they resembled in cultural characters the colon bacillus. Cultures made from the blood yielded no growth. The blood serum was examined for specific agglutinins; in all cases negative results were obtained with the typhoid bacillus, but positive with the paratyphoid. Some writers depreciate the value of agglutination in this disease on account of the presence of bile in the blood, to which they attribute the phenomenon. However, Conradi has recently emphasised the fact that bile does not agglutinate the typhoid or paratyphoid bacillus. Careful control experiments confirmed the conclusion that specific agglutinins were present in these cases. The patients were quartered within the same walls, but their cells were well separated. Five of them ate in the same dining-room. Evidently the source of infection was the food or the drinking water. No particular article of food was incriminated, but the meat was suspected, as many outbreaks of meat poisoning appear to be due to gastro-enteritis produced by the bacillus paratyphosus. In 1886 Weil of Heidelberg first described this form of jaundice, to which his name has been attached by the Germans, who considered it a separate clinical entity, but recent observations point to the conclusion that Weil's disease is only a form of a more general icterus infectiosus.

## LEAD-POISONING FROM A SODA-WATER FOUNTAIN.

IN the *Boston Medical and Surgical Journal* of Nov. 4th Dr. A. L. Patch and Dr. E. W. Taylor have reported a case of lead-poisoning from an unusual source. A Russian Jew, aged 55 years, was admitted into hospital on August 22nd, 1908. His wife and one daughter were ill from lead-poisoning and another daughter had recovered from the disease. For the past two years the patient's health had been failing. Two months before admission he had an attack of severe colic with hæmaturia and became very constipated, and the pain continued. For a few days his mind appeared to be affected; he was forgetful and could not complete his sentences. On admission he was semi-conscious and difficult to rouse. There was the lead line on the gums. The knee-jerks were normal and there was no evident paralysis. The skin was pasty and the mucous membranes were pale. The pulse was of low tension. Fine, moist râles were heard at the bases of the lungs. The ankles were slightly œdematous. The urine contained a trace of albumin and a few hyaline and fine granular casts. It was found that 18 months previously the patient bought a second-hand soda-water fountain. In April, 1908, the block-tin piping in the fountain became leaky and he substituted lead piping for it as this was less expensive. In May he began to feel weak and his power of lifting became weaker. In the following month he had crampy pains in the abdomen and limbs. His only drinking water was obtained from the soda-water fountain. Later wrist drop and atrophy of the supraspinati and of the muscles of the arms developed. Some of the atrophied muscles gave the reaction of degeneration. Under potassium iodide and galvanism he recovered. The soda-water in the fountain gave a marked black precipitate with hydrogen sulphide. Careful examination of the patient's house revealed no other source of lead poisoning.

THE excellent collection of English coins, chiefly crown pieces, made by our late editor, Mr. Thomas Wakley, and his numismatic library, were sold by auction at Sotheby's this week. The three days' sale realised £2896.

THREE lectures on Some Problems Relating to the Evolution of the Brain will be delivered in the theatre of the

Royal College of Surgeons of England on Dec. 13th, 15th, and 17th, at 5 o'clock each day, by Professor Grafton Elliot Smith, M.A., M.D., Ch.M., F.R.S. (Arris and Gale lecturer).

THE Medical School of King's College Hospital, which was by the King's College, London (Transfer), Act separated from King's College, has been admitted as an independent body to the status of a school of the University of London in the Faculty of Medicine.

A TELEGRAM from the Governor of Mauritius to the Secretary of State for the Colonies reports that 33 cases of plague with 13 deaths occurred in the week ending Dec. 2nd.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

### DENTAL JUBILEE DINNER: ADDRESS BY MR. BUTLIN.

A DINNER was given by the President and Council of the Royal College of Surgeons of England at the College, Lincoln's Inn-fields, on Thursday, Dec. 2nd, at which the jubilee of the granting of the Dental Charter to the College was celebrated. Mr. Butlin, who presided, was supported by many members of the Council of the Royal College of Surgeons, and amongst the company were Mr. William Hern, President of the Odontological Section of the Royal Society of Medicine, Mr. H. R. F. Brooks, President of the British Dental Association, Sir Richard Douglas Powell, Mr. R. Bligh Wall, Master of the Society of Apothecaries, Sir William S. Church, Mr. C. S. Tomes, Mr. Morton A. Smale, and the Editors of the *British Medical Journal*, the *British Dental Journal*, and THE LANCET.

On the plan of the tables was printed the text of the memorial presented to the President and Council of the Royal College of Surgeons on Dec. 13th, 1855, by 18 dental practitioners asking for the institution of a diploma in dental surgery. Other information given on the same paper included the date of the charter enabling the College to grant licences in dental surgery, to wit, Sept. 8th, 1859, the names of the examiners constituting the first and present examination boards in dental surgery, and the extract from the College register showing that on August 1st last there were 2183 licentiates in dental surgery, of whom 14 hold the Fellowship and 238 the Membership of the College. Another interesting document was the menu-card, showing, as it did, a baron of beef as the *pièce-de-résistance* of an excellent repast.

After the loyal toasts had been given by the PRESIDENT,

Mr. BUTLIN rose to propose "The Dental Profession" in the following terms: When it came to the knowledge of the Council of this College that 50 years had elapsed since the Dental Charter was granted to the College, it seemed to the members of the Council fit that so important an event should be celebrated. After consideration they came to the conclusion that this might best be done by offering a dinner to the members of the dental profession in the precincts of the College. We should have liked to entertain all our licentiates of dental surgery, but our space is limited, and we were obliged to confine our invitation to what may be called the representatives of the profession of dentistry. Our idea seems to have commended itself to you, for we have the pleasure of welcoming here a large number of distinguished members of your profession. I wish you, in the name of the Council, a hearty welcome, and I only regret that the time which has passed since the events which led to the granting of the Dental Charter is so long that we have no one here to-night who took such a share in those events as would have entitled him to tell us of them from his own personal recollection.

At a recent meeting of our Council Sir Henry Morris said that the condition of dentistry 50 years ago was "chaotic," and I am sure he did not use too strong an expression. For a study of the literature of the time has taught me that dentistry was practised by all manner of persons. For instance, the chemists and druggists often associated the practice of dentistry with their ordinary business. And Clause LV. of the Medical Act of 1858 places chemists, druggists, and dentists in the same category. Mr. Walter Brindley of Sheffield writes in 1857 (*British Journal of Dental Science*, i, 223): "For instance, in the last *Directory* for the town of Sheffield there is a certain practitioner ..... put down as 'brass-turner and dentist.'" And Mr. Donaldson Mackenzie writes to the same journal in 1859 (iii., 151) to tell how, in his travels about England, he had studied the position of dentists, and "found one sexton, one or two delectable specimens of our present system of education, who could not sign their own name, and one doing a tolerable practice who could neither write nor read." In truth, a man might serve a dentist one day in the capacity of servant or mechanic, and might set up as a rival to his master on the following day, provided he were clever enough to persuade the public of his capability. And he was free to advertise himself to what extent he chose. Even then, however, they did things better in that respect in France. For I have come across a delightful specimen of the art (in a letter from Cosmos in the *British Journal of Dental Science*, iii., 47), which runs as follows: "Grande Maison de Dentition. Mons. et Mad. de S. announce that they set teeth with diamond pivots and stop teeth with emeralds." And they further remind the public that "it is useless to speak much of their new mode of extraction, as the process is entirely by steam, and is consequently the most efficacious of any system practised by other dentists." No wonder that such ill conditions as these moved 18 gentlemen practising dentistry in the year 1855 to meet and consider what could be done to ameliorate them. Their consideration resulted in the composition of a memorial to the President and Council of this College. I have had the memorial printed with the 18 names attached to it, that each one of our guests may possess a copy of it if he pleases. It will be seen that two motives are expressed in the memorial—the condition of dentistry in England and the much better position of dentistry in America. During the last 20 or more years I have often heard the superiority of American dentists vaunted by rich persons in London, and I regarded this as a fashion of modern times, like the determination of such persons to consult foreign specialists in preference to their own specialists. I had no idea that American dentistry had really been so superior to English dentistry before the granting of the Charter. At the present time there is no reason to believe that American dentistry is superior to English dentistry, or that the best English dentists are inferior to the most skilful American dentists. But in 1855 there can be no doubt that America was far ahead of England in the education and position of dentists. The memorial was sent up to the College in December of the year 1855 and was presented to the Council at its meeting in January, 1856. It was referred to a committee of six members of the Council, with Mr. Green as their chairman. In February, 1857, the memorialists addressed a letter to the College asking whether anything, and if so what, was being done. Mr. Edmund Belfour, the secretary, replied to the effect that the legal advisers of the College had been consulted and had given it as their opinion that it was not competent for the College under its present Charter to do what the memorialists had suggested. It would, therefore, be necessary to apply for a special Charter, and the Council could not do that while legislative measures were before Parliament because they were in conference with, and pledged to, other medical corporations in respect to these measures.

In the course of the next year these legislative measures produced the Medical Act of 1858, in which Clause XLVIII. provided that "It shall, notwithstanding anything herein contained, be lawful for Her Majesty, by Charter, to grant to the Royal College of Surgeons of England power to institute and hold examinations for the purpose of testing the Fitness of Persons to practise as Dentists who may be desirous of being so examined, and to grant Certificates of such Fitness." The earliest possible advantage was taken of this clause, and the Dental Charter was obtained in September, 1859, just 50 years and a few months ago. The first board of examiners—Mr. Lawrence, Mr. Green, and Mr. Arnott for the surgeons; Mr. Thomas Bell, Mr. John Tomes, and Mr. Arnold Rogers for the dentists—was soon afterwards appointed, and in the following year (1860) the first examinations were held.

In that year no fewer than 111 candidates took the diploma—a remarkable proof of the earnestness of the leaders of the dental profession, for some of those who passed the examination were qualified in medicine and surgery, and some had been leading men in their profession years before the granting of the Charter. The number of those who took the Licence in the first year is the more remarkable when it is remembered that the total number of dentists practising in England at that time was estimated at from 1200 to 1500. The Dental Act, which made qualification as necessary to a dentist as it is to a medical man, was not passed until 1878.

Such is the official account of the transaction, and I would now like you to hear the human side of it. With the exception of the long delay in obtaining the Dental Charter there might seem nothing of interest in relation to the movement. In the minutes of the Council and in the official letters there is no trace of a hostile spirit. But it was far otherwise outside the College walls. For no sooner did a number of the rank and file of the dental profession know of the memorial than a meeting was called, speeches were made against the proposal, the independence of the dental profession was affirmed, and an association was formed to which the high-sounding title of College of Dentists was applied. The memorialists, on their part, were not content with what they had already done. They also took counsel with their friends, and, without delay, established the Odontological Society of London, which at this moment forms the Odontological Section of the Royal Society of Medicine. Thus there was on the one side the Odontological Society with the policy of combination with the College of Surgeons; on the other side, the College of Dentists and independence. I think the College of Dentists had, perhaps, the larger number of members, but the society had the very pick of the profession. Its meetings were from the first characterised by high scientific value, and although surgeons occasionally read papers at them, the society contained so many men of ability—many of them qualified in medicine and surgery, and more than one of them a Fellow of the Royal Society—that there was no need of outside help. The College of Dentists, on the other hand, could scarcely boast of one man of high position or distinguished ability among its ranks. But, nothing daunted, it called in outside aid, established courses of lectures, and actually obtained the services of Hulme, Benjamin Ward Richardson (a host in himself), Erichsen, and Spencer Wells. With the rise and growth of the two parties, there soon arose, also, two organs of the press, the *British Journal of Dental Science*, which took the part of the Odontological Society and combination with the College, and the *Dental Review*, which took that of the College of Dentists and independence. They went at it hammer and tongs, and a fine din there was. Every month, when the journals appeared, the sparks flew; and although no bones were, so far as I know, broken, there were furious attacks on reputations, and you may be quite sure that our College was not left out in the cold.

The long period of apparent inaction on the part of the College afforded, as you may suppose, ample opportunity to the shafts of the enemy. The College never intended to do anything or to grant the petition of the Memorialists: it held them in ridicule: the Council were far too proud to be mixed up with the dentists. Such was the burden of the opposition orators and of the *Dental Review*. The grant of the Charter must therefore, I think, have fallen heavily upon them. I have no doubt that some of the members of the College of Dentists consulted the *Review* as to the course they were to take; for that journal, in its issue of October, 1859, advises: "Do nothing." ..... "Then the hybrid Charter will do nothing." "The College of Surgeons will find their work much too warm to be pleasant, &c." But it soon became apparent that the combination party and the surgeons were in deadly earnest, and that the hybrid Charter would do a great deal. Nevertheless, the College of Dentists and the opposition still kept up their tail, and the College of Dentists seemed to me, as I read the articles and communications in the *Dental Review*, to be going quite strong, when, to my astonishment, an extraordinary event occurred. For, on May 4th, 1863, the Odontological Society of London raised its head, opened its mouth, and swallowed the College of Dentists whole, so that no man saw it more. The only effect which this miraculous performance seems to have produced upon the society was that it swelled considerably from accession to its members, and that it changed the form of its tail, for it became from that time the Odontological Society of Great Britain. I can tell you there was great jubilation that evening. The rooms of the society were filled. Mr. Arnold Rogers was there, in spite of illness. Mr. Imrie, the President of the College of Dentists, was there, but not able to make a speech on account of an "affection of his throat," and so his speech was delegated to Mr. Samuel Rymer, who had fought the battle valiantly for independence, but had also been largely instrumental in conducting the negotiations between the society and the College of Dentists to a successful issue. He died only last year. There were congratulations and a great shaking of hands, and that night and in that fashion the opposition came to an end.

Between 1855 and 1860, or nearly within that period, the two great dental hospitals were founded. Two schools of dentistry were established. The Westminster General Dispensary also made arrangements for the teaching of dental students. The dental journals which I have quoted made their first appearance; and I think what must be called the first scientific treatise on dentistry was published from the pen of Mr. John Tomes. In fact, the agitation which led to the granting of the Charter and the establishment of the diploma was so strong that it produced these great results in addition to the Charter. Nor were the provinces behind in this respect. The Dental Dispensary was founded in Birmingham even earlier in the year 1858 than the dental hospitals in London. Liverpool had its dental hospital in 1860, and, where Liverpool stepped, you may be sure Manchester was not far behind. There was another foundation during that period. The Odontological Society was scarcely established when its members began to collect the material for a museum. I cannot associate any name or names with the museum at its origin, but I feel sure that no one here will feel aggrieved if I attach the name of one of our guests to the later development of the collection. I believe all those who know will admit that Mr. J. F. Colyer has had as much as, perhaps more than, any other person to do with making the collection one of the finest, if not the very finest, collections which the world can show. As you all know, it used to be lodged in the rooms of the Royal Society of Medicine in Hanover-square, but it was very little used there, not nearly so much as it deserved.

I need not enter into the history of the negotiations which culminated in its transference to our care on terms of a like kind to those on which we hold the Hunterian Museum. It suffices to say that we have gladly accepted the responsibility of guarding the collection, and that we have prepared for it a large room in the basement, and have had a staircase constructed to convey visitors directly to it. I hope you will presently visit the odontological collection, for, although it is not yet ready for study, the energy of our conservator, Dr. Keith, and the attention of our secretary, Mr. Forrest Cowell, have made it ready for your inspection to-night. The access to the staircase is through the doorway behind the statue of John Hunter, and I would have you pay attention to the statue as you pass it by. The members of the Odontological Society have every cause to be interested in it, for, just fifty years ago, a number of the members of that society clubbed together, and sent a cheque to Mr. South for £50 towards the erection of the statue. All the matters I have referred to are of interest, but they did not quite satisfy my mind. I wanted to know whether any change had taken place in the science of dentistry itself. 50 years ago the advocates of independence based their policy on what they believed to be the actual position of dentistry. "We are clearly, by policy and by practice, a body distinct from Medicine. We are kindred to it, but not of it." So said the *Dental Review* (i. 20, 1859); and the same year the *Medical Times and Gazette* wrote (December, 1859): "That dentists may possibly be better for a surgical examination we do not deny; but dentistry is essentially a mechanical art, with which surgeons are not conversant." In order to see whether such views still hold good I made some study of the earlier and later volumes of the Odontological Transactions and found that, although some of the earlier volumes contained papers of wide interest in connexion with the teeth, these were for the most part the work

of surgeons, that the later volumes contain many more communications of this kind, and that they are for the most part furnished by dental surgeons.

[Mr. Butlin proceeded to review the purpose and scope of modern dental literature, showing how it includes an increasing amount of general medical and surgical knowledge having special application to odontology and stomatology. He continued:]

From the point of view of an outsider, the teeth seem to me as important in their relation to the health of the individual and of the community as the eye and ear. The early decay of the teeth and the conditions on which it depends in these degenerate times are matters of national importance. The presence of a dental surgeon is of more value to an army in the field than the presence of almost any other specialist. (Mr. Arnold Rogers, F.R.C.S., in his Presidential Address before the Odontological Society in February, 1859, said: "He believed, further, that the day is close at hand when dental surgeons will be brought into requisition in the army, or else that men specially qualified to treat dental diseases will be appointed to battalions." There had already appeared an article in the *British Journal of Dental Science*, iii., 46, in favour of this course, but "the question naturally arises, where can we obtain a staff of competent dentists, if called for?" &c. In those days the soldier had still "to bite the cartridge.") In truth, a great change has come over dentistry. It is no longer "the mechanical art of dentistry"; it is the art and science of odontology. And this change has been effected in the course of 50 years, by two generations of men. Seeing this change, I asked myself, What are they going to do with it? And I ask you, Gentlemen, What are *you* going to do with it? You have made odontology one of the great specialties of medicine, and yet the most of you stand outside medicine; in such a manner that I cannot help perceiving that the present position of odontology is a standing menace to medicine, for it presents the remarkable spectacle of a large number of men practising a specialty in medicine who are not qualified in medicine. I speak advisedly when I use these words. And I will give you a reason for them. During the last year in which I was Dean of the Faculty of Medicine of the University of London a proposition was brought before the Faculty to establish degrees in dentistry. It came, as I think, from the Board of Dentistry, and was presented in two forms—the establishment of degrees which should only be given to the holders of M.B., B.S., and of a degree of Bachelor of Dentistry to be given to persons who had not qualified in medicine. I presided over the meeting of the Faculty at which the question was discussed. The second proposition was supported by the surgeons rather than by the dentists, and was attacked by the dental members of the Faculty. The proposition to establish degrees in dentistry was rejected by 16 votes to 13. Shortly afterwards I became a member of the Senate of the University, and I had not been there long before this proposal to establish degrees in dentistry was sent up to the Senate, recommended by the Academic Council. It was nearly passed through the Senate, but was deferred on my motion. Later, it was referred to the Committee of Medical Members of the Senate. If my memory serves me true, nine of us were present at that meeting of the committee. Eight of the nine voted in favour of the degrees, and my vote alone prevented a unanimous recommendation to the Senate. Before the question again came before the Senate I had gained to my view two or three of the medical members, and had been supported by the opinion of some of the leading practitioners of odontology in London. So that when the final discussion took place in the Senate it ended in a resolution, moved by Sir William Collins and seconded by Mr. Butlin, "That the next business be proceeded with." I was even more shocked at the arguments which were brought forward in favour of establishing university degrees of an inferior class than I was by the proposal itself. Some of them were weak, others of them were wicked.

No, Gentlemen, I am afraid the present position of odontology can only be justified on one of two grounds: that every young man who wishes to practise one of the "ologies" should be permitted to do so without qualifying in medicine and surgery; or—but I am sure you will not accept this—that odontology stands on an inferior plane to all the other great "ologies" of medicine. If you will have neither the one nor the other of these two alternatives, I would suggest in the interest of odontology, in the interest of medicine in its widest sense, and, last but not least, in your own interest, that you should do all that lies in your power to take the next great step forward, and place your specialty on the same lines as, and in equal position to, the other great specialties of medicine.

Mr. Butlin concluded by giving the toast of "The Dental Profession," to which Mr. Hern and Mr. Brooks responded.

Mr. HERN, in replying to the toast of "The Dental Profession," said that he had no doubt been called upon to reply to this toast because the Odontological Section of the Royal Society of Medicine, of which he had the honour to be President, had played such an important part in those early days referred to by the President, when all those efforts were made to bring the dental profession into a solid phalanx. 50 years ago there was no cohesion, no professional brotherhood, and until the middle of the last century no step had been taken towards cohesion. The 18 memorialists to the College had taken the initiative in that direction, and these early pioneers must be looked upon as being the founders of the dental profession, as well as of the Odontological Society. He referred to the value in the eyes of the public of a qualification granted by such a body as the Royal College of Surgeons rather than that granted by an independent body, but thought that the opponents of the scheme of the Odontological Society and the Royal College of Surgeons had been equally successful in raising the professional status of the dental profession. To his mind the benefits accruing from the institution of the L.D.S. diploma were many: it enhanced the status of the profession, it also increased public confidence, and engendered a feeling of professional brotherhood. When the Royal Society of Medicine in 1907 was in process of formation and the various scientific bodies were being merged, the licentiates in dentistry were considered to have a qualification of their own and were considered not less worthy than other practitioners for entrance to Membership and Fellowship of that body. Dental surgery was then acknowledged as an important branch of the healing art. In conclusion, he paid a tribute to the arrangers of the odontological collection in the Museum, and thanked the College for their hospitality.

Mr. BROOKS, in tendering thanks for the kind way in which the toast had been proposed, said that whilst he did not pretend to agree with all that had been said by the President, he was none the less aware of the great benefits which the granting of the charter and the institution of the licence had conferred, and was also sensible of the very distinguished honour which he shared with Mr. Hern in being called upon to speak for the dental profession at so momentous a period in its history as the "jubilee" of the granting of that charter, or as he would express it "the grafting of dentistry upon an advanced stem of surgery." He felt that as time went on and science progressed the dental profession must become more closely allied, or as the President suggested, an integral part of the whole profession of medicine, seeing that their history, training, achievements, and their aims were so closely interwoven. The association which he had the honour to represent was united, in fact absolutely united, upon their fundamental objects—viz., the common good of dentistry and of humanity. With regard to the progress of their science, it had made remarkable advances, and now the State was beginning to realise that there is a national work to do. But perhaps the most significant point of all was the evolution of the ethical idea among practitioners themselves, who had learnt that union meant strength. They would be justified in looking forward to the future with some amount of confidence, and in face of difficulties which had yet to be surmounted he had no fear as to the issue, seeing that the dental profession had the support and sympathy of the Royal College of Surgeons.

Mr. TOMES, in proposing the toast of "The Royal College of Surgeons of England," said that in order to realise the debt which the dental profession owed to the College of Surgeons it was worth while to consider the state in which the dental profession was at the time before the memorial was sent up to that body, and referred to the part played by his father in the early days before qualification was an essential to practise dentistry. He recalled the fact that it was his father who sketched out

the curriculum for dentistry which was adopted by the College, and the foresight which he then showed was evidenced by the fact that it had lasted with the exception of a few minor alterations until the present day and had been adopted by every licensing body in the kingdom. He said that he hoped the idea of autonomy for the dental profession would not arise in the future. He considered it a happy thing that the President of the College (with whom he coupled the toast) should at this moment be Mr. Butlin, on account of his being identified very largely with work on the more serious aspects of oral diseases.

After Mr. BUTLIN had briefly replied, an adjournment was made to the Museum where the odontological collection was inspected and deservedly admired.

## SOME CONSIDERATIONS OF MEDICAL EDUCATION.

### VII.[1]

*Intricacy of Educational Problems.—One Portal System.—Extension of the Statutory Time of the Curriculum.*

RETURNING from consideration of the peculiar position of the London students to the main theme, we see that the difficulties in the medical curriculum have long been recognised by the General Medical Council and by all who have had their attention drawn to the matter through practical interest in the education of the medical student. The brief accounts which have been given of the various proposals for making the educational course of the student practical as well as sufficient for the public needs can hardly have failed to show any who have read them the grave problems which lie ahead, and their intricacy, together with the magnitude of the interests involved, form a sufficient apology for not putting forward any comprehensive scheme for the general reform of a system in which there is so much that is excellent, in which so many of the apparent drawbacks can be actually interpreted as virtues, and in which every situation is shifting and tends to shift more with the general progress of our science. But it will be of service to consider the course along which valuable differences might be made in the existing procedure, under the idea that with the disappearance of some admitted evils the formation of a scheme of a comprehensive nature should become possible in the future.

Here we arrive at an inevitable point—the question of the merits of a one-portal system and the probabilities of such a system, with its implied State degree in medicine, ever being instituted. These are matters which have been much discussed in THE LANCET, and in bringing them again to the front it is with the admission that there is nothing new to be said about them, and with the feeling that brevity will be excusable. But only a week ago this scheme was advocated in our columns in a letter from a well-known London consultant surgeon. The "one-portal" system has been desired ardently by most liberal thinkers as doing away with the opportunities that some students may enjoy of entering the medical profession upon easier terms than their fellows. The simple way of securing the one-portal system would be for the State to hold identical examinations in certain capitals and university towns simultaneously and to admit the successful candidates to the Medical Register under the title of M.D., or at least with the clear specification that each man admitted could call himself "Doctor." As far as the public would be concerned all medical men would then be equal, and any favour which a man enjoyed with the public would be due to his work and his character. Appointments would no longer be open only to graduates of certain universities or diplomates of surgery of certain corporations, but of course all honour qualifications would continue to facilitate election for their possessors. Every candidate for a post would then produce, as additional evidence of fitness, any testamurs that he possessed, but the non-possession of them ought to bar no man from competing, for all men on the Register would be on the Register for the same reason—the State qualification. The London student, whose anomalous position has been considered, working in the splendid clinical field of the metropolitan hospitals with the elaborate scientific environment of a metropolitan medical school, when entering private practice would no longer find himself at a disadvantage, even though he did not avail himself of the University of London. All medical men would be equal in the eye of the public, and the substantial grievance under the present *régime*, that of two equally well-informed men one has and the other has not an academic right to the popular title of "Doctor," would disappear. But this simple way of making medical education uniform and of avoiding a multiplicity of examinations would probably be opposed by the medical corporations, if not by the universities, and would in that case have little chance of becoming law. Those who preside over the corporations are aware of the difficulties ahead of them owing to the creation of new universities having the power of granting medical degrees, but the corporations have by no means exhausted their educational functions—the vast majority of the medical profession enter that profession through their portals or take their qualifications in addition to their medical degree—and such bodies are not likely to acquiesce in a system which might greatly damage their utility and prestige. The governing bodies of the corporations cannot fail to see that their policy in the face of this creation of new universities is to join hands with these and the older universities, as far as they can do so without sacrifice of dignity or breach of trust in respect of their constitutions. In this way the corporations would help the medical faculties of the universities, and the universities would help the diplomates of the corporations, while considerable economy of effort and money ought to be effected by such fusions of interests. The possible establishment of relations between the University of London and the English corporations becomes, it will be seen, a matter of vital importance in medical education.

However much we may regret the disappearance of an ideal deeply cherished by some of the soundest medical reformers the scheme of a State degree seems out of the range of practical politics, and we must look elsewhere for a method of dealing comprehensively with admitted defaults.

Two things are certain. If it is granted that the medical student has now more to learn in the time allotted to him than he can master (and this fact is one of the arguments upon which the one-portal system with its simplification of examinations has been based), either this overloaded curriculum must be better defined so that the student shall waste no time and shall not be exposed to great chances of rejection at the hands of a multiplicity of examiners, or the duration of the medical curriculum must be prolonged. In the brief but detailed account which has been given of the many recent debates at the meetings of the Council, having their origin in the discussion of this question or points germane to it, it appears to be admitted on all hands that the curriculum is overloaded, which indeed seems sufficiently proved by the fact that although by statute its duration is five years in practice the average time taken by the student is considerably over six years.

Considering firstly the extension of the curriculum, the tendency towards change in this direction is sufficiently indicated by two things, both of which have been alluded to in these articles. The University of London has definitely extended the statutory time from five years to five and a half which its graduates of medicine must take to obtain degrees. The other point is that the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England, which used to count a year's work in the preliminary sciences done at a recognised secondary school as counting for a year's time in the five years curriculum, will now only allow six months for such work to schoolboy students. The action of the University of London is not very likely to be imitated, or at any rate cannot be counted as any promise that all the educational bodies will take the grave step of lengthening the medical curriculum to any appreciable extent, but the departure is significant. It shows the University to be desirous not to make its degrees easier of attainment, while it supports the fact that the curriculum is overloaded. If any general movement in other Universities in imitation of the University of London is expected, it must not be forgotten

[1] Nos. I., II., III., IV., V., and VI. were published in THE LANCET of Oct. 23rd (p. 1232) and 30th (p. 1301), Nov. 13th (p. 1459), 20th (p. 1531), and 27th (p. 1616), and Dec. 4th (p. 1694), 1909, respectively.

that medical students are not recruited on the whole from a wealthy class of the community, while their period of student life is necessarily passed in the large centres where the price of living, given all economy, is none the less high. Nor must it be forgotten that a large proportion of medical men do not make big incomes, so that the compulsory addition of any period whatsoever to the time of studentship is demanding from the student an additional premium for entrance into a profession which does not hold out for him any additional prizes as compensation. And, lastly, the medical education of this country is extremely ill supported by funds, and it is unfair to add to the burdens of those who now carry on this education almost gratuitously. It is understood that a movement has been made in one place with success to secure recognition of a medical school as a technical school with a right to a Government grant. If this principle became common those responsible for the education of medical students might recognise with more complacency an extension of the curriculum. Although the easiest way of all out of the difficulties with which the Education Committee of the General Medical Council is now dealing would be to lengthen the statutory time of the student's course, and although apparently only 13·8 per cent. of the students actually complete their studies within that time, the Council is not likely to insist for the present upon the student's curriculum being longer than five years. The highly interesting debate, which is reported on p. 1750, confirms this view, though the developments of the future may make a difference in the opinion of the Council.

*(To be continued.)*

# THE REPORT ON SCOTLAND OF THE ROYAL COMMISSION ON THE POOR-LAWS AND RELIEF OF DISTRESS.

## II.[1]

THE subject of Poor-law medical relief in Scotland was investigated in 1904 by a departmental committee of the Local Government Board, presided over by Mr. J. Patten MacDougall, C.B. (a member of the recent Commission), and the report of the latter refers its readers to that of the committee for details of the system. The only statutory enactments with regard to Poor-law medical relief in Scotland are to be found in the Poor-law Amendment (Scotland) Act, 1845, by which it is enacted that medical officers must be appointed to poorhouses, to give regular attendance and to be paid a reasonable remuneration therefor, and that outdoor medical relief is to be provided "in such manner and to such extent as may seem expedient." This enables a parish council to engage for outdoor relief a medical officer at a salary or to employ a medical practitioner as the occasion arises and to pay him a fee for the service rendered. The "Board of Supervision," constituted as a central authority in Poor-law matters in Scotland in 1845, and superseded in its functions by the Local Government Board of Scotland so recently as 1894, was without representation in Parliament and was not liberally endowed with powers over the administration of relief. It was able, however, to obtain from Parliament in 1848, in order to assist in the promotion of an outdoor medical service, an annual grant of £10,000. This grant was increased in 1882 to £20,000, and in 1885, in order to encourage the introduction of trained nursing into poorhouses, the cost of such nursing was made a first charge against it. The medical relief grant was converted into a powerful agency for the improvement of Poor-law medical relief by two conditions attached to participation in it—namely, that there should be a fixed minimum expenditure on medical relief by each parish, to which a grant was made, and that a medical officer should be appointed. It also caused the establishment of a system of trained nursing in poorhouse infirmaries. The above conditions, which originally were beneficial when they were embodied in regulations made by the Board of Supervision, have since been stereotyped by incorporation in the Local Government (Scotland) Act, 1889; and as their relaxation to suit particular cases is often desirable, the amendment of Section 22 of the above Act was advised by the Medical Relief Committee, whose recommendation is now endorsed by the Commission, the suggestion being that the Local Government Board should be enabled to make rules which would be of a more elastic character. The increase of the medical relief grant is recommended as an alternative for the introduction of the system known as "block grants." Under present conditions, as indicated above, parish councils have a very free hand in the matter of medical outdoor relief, and although the approval of rules for the dispensing and supplying of medicines in poorhouses is one of the powers of the Local Government Board, the Medical Relief Committee found that no such rules had ever been submitted to the Board. As to this, the Commission recommends the giving of powers of initiative to the Board, and advises "that the Local Government Board should be empowered to prescribe from time to time the arrangements necessary for providing the poor with medical assistance and nursing; and that the arrangements for indoor and outdoor medical relief should be periodically inspected on behalf of the Board by a medical inspector."

### *Indoor Medical Relief.*

In the matter of indoor medical relief the Commission finds considerable cause for comment in Scotland. In Glasgow only there are Poor-law hospitals erected on sites detached from the general poorhouse. "The great advance in this respect, which dates in England from 1867, can scarcely be said to have begun in Scotland." In other parishes there are well-equipped hospitals or wards suffering, in the Commission's opinion, from their direct connexion with the poorhouse; in others, again, the accommodation is worse; and in some there are no sick wards at all, healthy and sick inmates being mixed up together.

The Commissioners quote from the report of the Medical Relief Committee the statement that the medical officer of the Scottish poorhouse, who appears to be frequently non-resident, does not enjoy the position to which he is entitled, and, as an example, has no voice in the selection, suspension, or dismissal of nurses. The insufficiency of the medical staff when kept, as it often is, at its minimum numerical strength, is condemned.[2] Great deficiency is found to exist in the provision of trained nursing in spite of the improvement effected through the agency of the grant. The Commissioners report that they "regret to find that out of 68 poorhouses in Scotland there are still 26 that have no trained nurses. Not only so, but pauper nursing, it appears, is permissible in all Scottish poorhouses." The following conclusions with regard to these conditions are followed by recommendations calculated to provide for their amelioration:—

That, in spite of recent improvements, the provision made by Poor-law authorities for the treatment of the sick indoor poor is inadequate because the accommodation is in many cases defective; that the sick are not properly classified; that the position of the poorhouse medical officers is administratively anomalous; that in some poorhouses the medical staff is insufficient; that the salaries of the medical officers call for revision; that the nursing staff is in many cases insufficient; and that pauper nursing should be abolished.

That much good would accrue if poorhouse hospitals were opened for purposes of clinical instruction. That there is an increasing demand on the part of the general population for hospital treatment in sickness; that the voluntary hospitals are unable to cope with the demand; that further hospital accommodation is necessary in different parts of the country; that the benefits of the hospitals are frequently abused by the well-to-do; that the Poor-law authorities are gradually being forced to provide accommodation for cases that formerly would have been treated in a voluntary hospital; and that there is overlapping and want of coöperation between the voluntary hospital and Poor-law authorities.

The Commission as to these latter conditions recommends:

That the sick poor should be accommodated in hospitals on sites detached from the poorhouses, adequately staffed, under the superintendence of a medical officer, and open for the purposes of clinical instruction.

It recommends also the conversion of superfluous poorhouses into hospitals, and that arrangements should be made where necessary for the reception of patients in voluntary and general hospitals, subject to payment made on their behalf by the authorities responsible for them. It also advises the desirability of compulsory powers of removal and detention of patients being given to Public Assistance authorities and parish councils.

### *Outdoor Medical Relief.*

Outdoor medical relief is largely due in Scotland to the operation of the medical relief grant which has secured the appointment of a medical officer or officers at a fixed salary in 800 out of the 874 parishes in Scotland. In towns it is

[1] The first article was published in THE LANCET of Dec. 4th, p. 1698.

[2] Fuller particulars as to this, with special reference to Edinburgh are given in the Minority Report, pp. 260, 261.

largely supplemented by medical charities and by the private benevolence of medical practitioners who give gratuitous attendance, and in these circumstances it is found by the Commission to be chiefly defective through want of practical coöperation between the various organisations. In small towns and in the Lowland districts the Commission has received no evidence to show that outdoor medical relief is generally inadequate, but the opinion is expressed that the provision of it by the Poor-law may be largely supplemented by the gratuitous attendance of private practitioners. "But (the report continues) as regards the Highlands and islands, it is clear that the medical attendance in many parishes is deplorably insufficient, and affects not only the physical well-being of the paupers but also that of the whole population. At the same time it appears that, notwithstanding the deficiency, the paupers themselves are better off in respect of medical attendance than the class immediately above them. The problem in these parishes is to secure even a minimum of medical attendance for the inhabitants."

The following will illustrate this point. The Island of Lewis has been mentioned already. On its western side is a district with a population of 13,000, scattered in about 40 villages. It is 72 miles long by the only existing road, and villages not situated upon the road must be visited on foot. All the medical attendance available has to be given by two medical men living 50 miles apart. In four parishes of Inverness-shire, as recorded in 1900, there were respectively 70, 67, 64, and 51 per cent. of uncertified deaths, and lest percentages should be deemed to be misleading we are given in respect of others the following figures:—

| | | Total deaths. | Uncertified. |
|---|---|---|---|
| Ross-shire | Lewis | 390 | 114 |
| | Mid Ross | 204 | 57 |
| | Western Ross | 81 | 43 |
| | Harris | 67 | 34 |
| | Shetland (landward) | 337 | 114 |

Trained nursing as a department of outdoor poor-relief in Scotland does not appear to exist. There is no grant available for it, and it is not provided for directly either in the Poor-law Act, 1845, or in the medical relief rules. Various district nursing associations, however, and notably Queen Victoria's Jubilee Institute, do good work, the latter agency being represented by 248 nurses in different parts of Scotland. The evidence of medical witnesses is cited by the Commission to show how great is the need for adequate nursing by women capable of undertaking it under the conditions in which it would have to be done, and according to these gentlemen it is nurses to work under their directions rather than a large supply of medical practitioners that is needed. The Commission calls attention to the deplorable conditions in respect of sanitation which prevail in the homes of the population in many districts. In discussing outdoor medical aid rendered by agencies other than the Poor-law, the Commissioners assign a prominent place to the gratuitous service rendered by medical men, and find that in large towns there are many medical charities. These, they consider, are abused in many instances by persons able to pay for treatment, and they comment on the fact that in spite of the supposed thriftiness of the Scotch there should be no provident dispensaries or public medical service on a provident basis.

With reference to phthisis, the Commission finds the Poor-law authorities to be alive to their duties but hampered in the performance of them by circumstances. In most poorhouses phthisical patients are segregated, but the objection entertained by the poor to entering the poorhouse militates against success, and as an instance of the anomalies brought about by the existing law it is mentioned that though the healthy dependents of a phthisical patient received into a poorhouse are given outdoor relief as a rule, the phthisical dependents of an able-bodied man cannot be received into the poorhouse at all. A certain amount of boarding out in private dwellings in country places and in sanatoriums takes place.

The Commission makes proposals for the amelioration of the conditions under which medical officers perform their duties; for the drawing up of a scale of fees for special operations and for midwifery cases; for the defraying of the cost of drugs otherwise than out of the pocket of the medical officer, and for the providing of housing accommodation for him where it is needed; for the appointment of additional medical officers; and for the provision of trained nursing for outside patients. They recommend that no disfranchisement should be attached to any form of medical assistance and that the administration of the Vaccination Acts should be handed over to the sanitary authorities.

In considering the question of the great need for medical aid among the poorer classes generally—i.e., including those not otherwise in need of public assistance—the Commission recommends that—

1. A better supply of hospital accommodation should be provided based upon the needs of each Public Assistance area.
2. That a united effort should be made to prevent the abuse of medical charities by persons in a position to pay for treatment.
3. That there should be systematic coöperation between the Public Assistance Authorities, the sanitary authorities, the education authorities, and the voluntary medical institutions, based on a clear definition of their respective functions.
4. That a joint committee representative of these authorities and of the medical profession should be appointed for the purpose (*a*) of framing schemes of coöperation to be adopted by the various bodies concerned; and (*b*) of considering after consultation with the Voluntary Aid Council, where such exists, the needs of each Public Assistance area in regard to hospital accommodation. That steps should be taken to organise, with the coöperation of the medical profession, a system of medical aid by some form of insurance—e.g., by the establishment of provident dispensaries or medical clubs; and that a departmental committee should be appointed to consider the means by which such a system can best be organised.

The remaining parts of the Commission's report deal with—V., "The Able-bodied and Unemployed"; VI., "Charity and the Poor-law"; VII., "Miscellaneous Questions," which include the recovery of the cost of relief; settlement and removal; rating; vagrants; and the detention or continuous treatment of certain classes of cases receiving or applying for public assistance. With regard to Part VI., the overlapping and want of coördination in the distribution of a very large volume of charitable assistance is dwelt upon, and the formation of voluntary aid councils and committees for the remedying of abuses and insuring effective aid being given in suitable cases is recommended. The persons referred to in Part VII. include the feeble-minded, with regard to whom it is recommended that they should be subject to complete control on the lines laid down by the Royal Commission on the Care and Control of the Feeble-minded.

We have given above a sketch of the principal matters of interest to the medical profession dealt with by the Majority Report of the Royal Commission. We have spoken of it as the report of the Commission, which, indeed, it is, and we recommend those in need of fuller information to refer to its pages, for they contain a very great deal that is of considerable interest ably and clearly explained. If read side by side with the report on England and Wales the report on the Scottish Poor-law shows the marked differences which, partly due to geographical and climatic causes, exist between two races united under one government and inhabiting adjoining territories. Like the report on England and Wales, it raises the hope that steps may be taken without delay to remedy the more readily remediable evils revealed and to initiate a new and better order of things in the matter of "public assistance."

To the Majority Report there is added, as in the cases of England and Wales and of Ireland, a Minority Report signed by the same dissentient four members of the Commission. It also contains a great deal that is interesting and well worthy of study, and the two reports read together form, as in the case of England and Wales (rather than that of Ireland), a most important treatise upon the subject dealt with. The Minority Report relating to Scotland makes the same recommendations that were put forward upon the two previous occasions for dividing up the subjects of public assistance between local authorities already constituted and for assigning control and recovery of costs to a registrar. Lord George Hamilton, the chairman of the Commission, adds a reply to the Minority Report and (subject to our expressed opinion that the Minority Report contains important and interesting matter) we are inclined to believe that the criticism contained in his memorandum is not altogether unjustifiable. In his first paragraph he observes, with regard to the Minority Report, that the latter part of it is not a report upon Scotland or dealing with the peculiarities of the system in force in that country, but is "an enlarged and varied edition of their original proposals intermingled with a new set of comments and criticisms upon the proposals of the Majority."

A memorandum by Professor Smart on the history of the Scots Poor-laws prior to 1845, published as an appendix, will be found well worthy of study.

# MOTORING NOTES.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

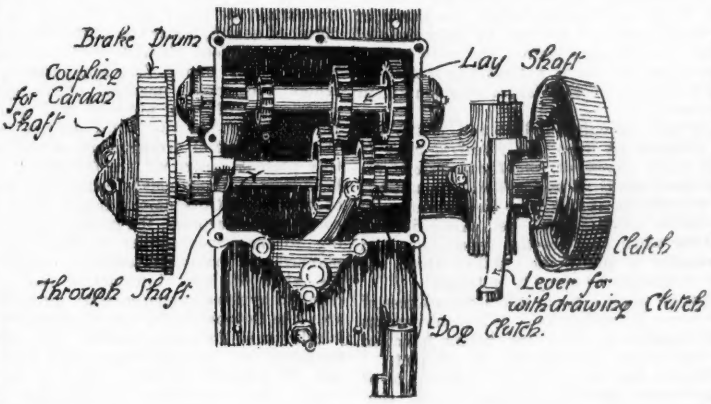
*The Question of Light and Inexpensive Cars.*

AT one time it was the policy of motor-car builders chiefly to cater for those to whom money was of little moment and who were indifferent not only to initial but also to running costs. Now nearly all the makers are turning their thoughts to the motorist of moderate means, and in this category the majority of the profession may, I think, be counted. Unfortunately the general tendency seems to be in the direction of the so-called light four-cylinder car. I am not disparaging, nor do I wish to disparage, this type, but for many of the chauffeurless doctors even a lighter runabout would be more useful. The lighter the car the lower the horse power, and thus less consumption of fuel and tyres. Lightness is an important factor in the matter of production and running expense; increase in dead weight not only means increase in the horse power needed to push the car along but also decrease in the real strength of the car, for the strains to which a car is subjected depend on the propelling force and the resistance of the road, and these increase in the actual ratio of the weight, and with this increase comes increased strain. It is therefore certain that the two points which the medical man, who intends to become a motorist, should consider when thinking of a car are lightness and simplicity; both spell absence of trouble—the former low tyres, small fuel, and upkeep bills, and the latter the absence of repair accounts; in fact, on a simple car the owner should be able to do most of the repairs himself.

*The General Construction of a Simple Car.*

The chassis—that is, the car minus the body—is formed of a motor, or engine, in which the power is produced, some form of transmitting this power to the road wheels, and some method by which in passing this power can be increased when more work is required of the car, as in climbing a hill. This is usually carried out by what is known as the Panhard type of change speed, and consists of a gearbox containing two shafts. One is connected by the clutch with the crank shaft of the engine, and on this spindle-toothed wheels slide. It is usually made in two parts, the end of one having a bearing in the end of the other, and by means of a dog clutch the two parts are made one and revolve together, and then the engine power is directly carried to the bevel at the end of this shaft, or rather at the termination of the cardan shaft, to which this shaft is connected, and thus to the differential and road wheels. This is the direct drive; otherwise the power is transmitted by a pinion to a second or lay shaft, and then back to the second half of the first shaft by toothed wheels, which can be slid in and out of gear, and in this manner also to the differential and wheels. The accompanying diagram illustrates a usual type of gearbox. By means of a third pinion on a separate shaft, through which the first shaft drives to the second, the reverse is obtained. The differential gear is a set of wheels arranged so as to average the speeds of the two driving road wheels when the car turns a corner, and this balance mechanism, by means of satellite pinions, distributes the power automatically between the two wheels, so that the outer one can travel faster than the inner one.

In addition to these parts the chassis consists of a frame on which these members are fixed, of springs to which the carriage body is attached, steering gear, axles, road wheels.




The engine in its most elementary form is a casting in which a piston can work up and down, and of course the inside of the engine casting or cylinder is machined, so that the piston is a perfect fit. By means of a valve the vapour of petrol, from a vaporiser or carburettor, is admitted to the cylinder; the piston ascends and compresses this mixture; at the correct moment, by means of the commutator attached to the two-to-one shaft, an electric current circuit is completed, there is a spark in the cylinder, the mixture explodes and forces down the piston, and the force of this thrust-down of the piston is transmitted by the piston connecting rod to the crank shaft, which is kept revolving by the fly-wheel, and the crank shaft through the clutch transmits the power to the gearbox and so on to the road wheels. The momentum keeps the crank revolving, and the piston ascends once more, compresses the gases left after the explosion; another valve, the exhaust valve, opens and these gases are pushed out, thus making room for fresh ones to enter, when the piston next descends and creates a vacuum. Some inlet valves are automatic—that is, they are kept shut by a weak spring and are opened by the suction action of the piston; others are, like the exhaust valve, mechanically opened—that is, they are lifted off their seats by their spindles being pushed up by tappets, which in their turn are raised by cams or eccentrics on the two-to-one shaft, which is connected to the crank by toothed wheels, with such a proportion of teeth on each that the cam shaft rotates once while the crank shaft turns round twice. This series of operations, suction (admission of gas), compression, explosion, and, lastly, expulsion of products of explosion constitute what is called the "Otto" cycle.

Of course, great heat is produced by the explosion, and in order to allow of lubrication of the cylinder wall and piston the cylinder has to be kept cool; this is done by surrounding the cylinder with a jacket, through which water is circulated by syphon or by means of a pump, and so that the water will not quickly boil away, in its course it is made to pass through narrow copper tubes exposed to the air. These tubes form what is termed the radiator, and on most cars the water is further cooled by a fan rapidly revolving behind the radiator, and so sucking in cool air to further the reduction of the water temperature. The ignition or explosion of the mixture is brought about by a spark, between two metal points in the cylinder, and it is this part of a car that accounts, or rather used to account, for most breakdowns and road stoppages. The latest type is the magneto, and the high tension variety seems the most satisfactory; for single cylinders it is run at cam shaft speed for four cylinders at the speed of the engine. In these instruments currents are produced by the rapid passage of coils of copper wire wound round soft iron cores between the poles of a magnet. But the objection is that occasionally magneto-fired engines need three or four turns of the starting handle before they are set in action. With the accumulator and coil system, one pole of the accumulator is connected to the primary coil, the other to the brush of the commutator; as the engine revolves this completes the circuit, an electric current passes through the primary coil, the trembler vibrates, a high intensity current is generated in the secondary coil, jumps at the sparking plug points in the cylinder, and so the mixture is exploded. With non-trembler coils there is a positive make and break at the commutator and the contact blade acts as a trembler. The usual carburettor is of the atomiser kind; petrol supplied by gravity enters a float chamber, and on the float rests an arrangement of levers, so that they work a needle valve, which cuts off the petrol when it exceeds a

certain height in the chamber; the petrol is drawn by the suction of the engine through a narrow pipe up a fine jet into the mixing compartment, air at the same time is drawn in along a tube which opens near the exhaust, so the air comes in heated, it mixes with the petrol, and the explosive mixture that results enters the engine through the inlet valve. A contrivance is fitted by which the amount of air can be varied, either by a lever or by the speed of the engine itself.

The reader with mechanical knowledge should be able to follow from this brief summary the general construction of a simple car.

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, Dec. 10th, 1831.

The practice of injecting the veins in desperate cases with substances of still more energetic properties than those which the chlorate of potash possesses, is by no means new to medicine. In an extensive and brilliant series of experiments performed on horses at the veterinary school of Alfort, Dupuy demonstrated the extraordinary success attendant on this practice, and the safety with which carbonate of ammonia and many other substances could be injected into the venous system. Again, the records of toxicology afford us examples by no means unique, of the successful injection of tartar emetic into the blood in cases of hopeless narcotic poisoning. In the Journal des Progrès, vol. 3, 1830, MM. Percy and Laurent relate the cases of three Russian soldiers cured of tetanus by injections of opium into the veins. In the same journal, the same writers also mention other cases of tetanus successfully treated by the injection of a decoction of the datura stramonium in half an ounce of water.

I trust I have now said enough to induce and justify the trial of this new proposal, at least *in the fearful cases in which venesection is found impossible, and the violence of the malady derides all other means of medication.* Should the method be found to succeed, it will have the advantage of fulfilling all the objects which Messrs. Bell, Kennedy, and Annesley, hold in view when they practise venesection, and that without threatening to induce the debility which the detraction of blood is thought by many to endanger.

In the performance of the operation, the circumstances of the disease must be borne in recollection. When the current of the circulation is impeded, as in the blue cholera, injection from the bend of the elbow can scarcely be efficient. I would, therefore, suggest that the tube, which should be of gold or ivory, be introduced into the external jugular vein immediately as it crosses the sterno-mastoid muscle. I would select this place as the nearest spot to the superior *cava*, free from the danger of the entrance of air caused by the suction force of the right side of the heart, an influence which Berard has shown to be ineffective in the introduction of air, except where the flaccid orifices of a divided vein are kept gaping and stretched by adhesions to adjacent prolongations of fascia or condensed cellular substance; as is remarkably the case with the subclavian and with the jugular in the lower third of its progress. The syringe used in the injection should contain no more than three ounces, the solvent should be distilled water heated to a blood warmth, and the syringe also equally warmed. The tube should not be more than an inch long, and curved gently for the convenience of manipulation, and it should have a marked conical form. In performing the operation, after the vein is exposed, I would make a puncture with a lancet, just sufficient to permit the introduction of the tube, but I would by no means detach the vessel from its connexions. The injection should be deliberately and slowly performed. From ten to thirty grains of the chlorate might, I think, be safely employed. *It would, however, be essentially necessary that before the experiment was tried, a minute analysis of cholera blood should be performed,* and the effects of the oxygenated salts examined, as to the change of colour and their influence on the affinity of that blood for oxygen in its uncombined or its nascent forms. To my mind no satisfactory analysis of the blood in cholera has yet been completed. HERMAN'S, the most recent and most minute, is still, I am prepared to prove, far from deserving implicit confidence.*

* Herman mentions *free acetic* acid as an ingredient in healthy blood. He also states that after coagulation of the cholera blood, the crassamentum was *acid* and the serum *alkaline!* It is unnecessary to dwell on the latter statement, as it involves an impossibility. Concerning the first, it is sufficient to observe that in the best analysis of the blood ever performed—viz., that by M. Lecanu of Paris, and for which he obtained the gold medal from the Academy (vide *Journal de Pharmacie, September* and *October, 1831*), no statement occurs of the detection of acetic acid, though, had it been present, M. Lecanu's process must have revealed its existence.

Excerpt from "Proposal of a New Method of Treating the Blue Epidemic Cholera by the Injection of Highly-oxygenised Salts into the Venous System." Read before the Westminster Medical Society, Saturday, Dec. 3rd. By W. B. O'Shaughnessy, M.D.

# Public Health.

### REPORTS OF MEDICAL OFFICERS OF HEALTH.

*Administrative County of Devon.*—We have received from Mr. George Adkins of Exeter a copy of his first annual report as medical officer of health for the administrative county of Devon. Although his appointment dates only from November of last year, Mr. Adkins has already found time to study the annual reports for 1908 of each of the district health officers in his jurisdiction and to summarise them for the instruction of his county council. In Devonshire coördination has fortunately been secured between the services of public health and elementary education by entrusting the supervision of both to the county medical officer of health, under the additional title of school medical officer, the four district medical inspectors of schools acting under him. Very appropriately, in a preliminary report the county medical officer gives an interesting description of the physical and geological features of Devon, which is the third largest county in England. With the general arrangement of the technical portion of this present report we are favourably impressed. It has been framed throughout in conformity with the instructions of the Local Government Board, and, what is essential for comparative purposes, the tabular matter is arranged according to the model forms of that Board. Systematically planned and tersely expressed, it contains, in our view, just the kind of local information and of expert guidance required by the supreme sanitary authority of a mainly rural area like Devonshire for the discharge of its manifold duties in relation to the public health. Mr. Adkins is fortunate in having at his disposal comparative local statistics of birth and of general mortality relating to a long series of years. The birth-rate of Devon has generally been considerably below that of England and Wales, and in recent years has shown a decline of about the same amount, the rate in the rural districts having declined, if anything, somewhat faster than in the urban. The death-rate last year in the administrative county was as low as it had been in any year of the previous ten. Referring to the relatively higher general mortality in a few of the larger health resorts, the medical officer explains that this is due to the presence of many invalids who repair thither to die, whilst as regards the urban district shown by the tables to experience the highest death-rate in 1908 we learn that this is due to excessive local fatality from tuberculosis. The report devotes careful attention to the question of infant mortality, which last year was at the low rate of 88 per 1000, the lowest for the last ten years and 33 per 1000 below that of 1899. As in other parts of the kingdom, the loss of infant life in Devonshire is far higher in the town than in the country districts. Among disorders amenable to sanitary measures the seven notifiable infectious diseases give particular reason for comment in this report. For, although their aggregate mortality was lower in 1908 than in any previous year, the reported attacks by several of them were far above the average in number. Of small-pox 3 cases were imported, the patients arriving at Plymouth from South Russia and being treated at the hospital ship in the Sound. With respect to one large town, the disquieting statement is made that 50 per cent. of the children are unvaccinated. Scarlet fever was present last year in more than half of the 52 districts of the county, more than 700 cases,

with 11 deaths, having been reported. In one borough a considerable outbreak occurred in connexion with school attendance, but none of the cases were fatal. Mr. Adkins remarks that the control of scarlet fever is difficult to maintain because of its mildness of type in recent years. The disease is generally spread through school attendance; indeed, many of the infected children, not feeling ill enough to discontinue attendance, are found in the schools desquamating, or discharging infectious matter from the nose or ears. Diphtheria was prevalent last year in 36 of the districts, more than 500 cases having been reported, 10 per cent. of which ended fatally. The worst outbreak occurred at a favourite health resort, where immunity from this disease had been enjoyed for several years. Many of the attacks were related to school attendance. In a neighbouring town, in which 65 cases occurred, the spread of infection was traced to "carrier cases" among school children. Devonshire is by no means free from enteric fever, as many as 112 cases, with 18 deaths, having been reported there last year. The disease was distributed over 25 districts. Many of the cases are believed to have been caused by contaminated shell-fish. In this case also the influence of "carrier cases" is believed by the medical officer to have been concerned in the propagation of the disease. He mentions an instance in which a woman communicated infection, having herself suffered from attack by enteric fever nine years previously. Among other conditions that are admittedly amenable to sanitary influence considerable space is devoted to the subject of tuberculosis. The pulmonary form of this disease caused 479 deaths, and other forms 142. Mr. Adkins makes some vigorous remarks concerning its prevention and its area of distribution. Of administrative action for the prevention of disease the report contains satisfactory account, but the county medical officer regrets that the district medical reports are presented in manuscript only, and he points out the advantages that would accrue to all if they were in every case available in printed form. In all rural areas the danger of pollution of drinking water is a constant source of anxiety to sanitary authorities. We read that in Devonshire the liability to pollution is much in evidence in certain districts, but that in several instances improvements are in progress. Considerable attention is devoted to the maintenance of a pure milk-supply. In some districts the regulations respecting registration and other sanitary precautions are not complied with by dairymen and in others the cowsheds are filthy and the cows and milkmen are anything but clean. Serious attention to these important matters is very properly urged in the report upon the district councils. Mr. Adkins gives interesting particulars respecting the methods of dealing with infectious disease in his jurisdiction. Only 13 of the urban and 4 of the rural districts have made hospital provision for isolation. In the remaining districts the patients have either to be sent to distant hospitals or else to be isolated as well as possible at home. With the object of securing timely information of outbreaks of infectious disease the county medical officer is provided with a weekly list of such occurrences within the administrative county, and by the courtesy of the medical officers of Exeter, Plymouth, and Devonport this list is supplemented by returns for those county boroughs. In many of the districts of the county the councils have provided antitoxin serum for the treatment of diphtheria, and the general purposes committee of the county council has recently sanctioned the provision of free bacteriology for use throughout its area in dealing with infectious diseases.

## VITAL STATISTICS.

### HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7056 births and 5196 deaths were registered during the week ending Dec. 4th. The annual rate of mortality in these towns, which had steadily increased in the five preceding weeks from 12·0 to 16·4 per 1000, further rose to 16·5 in the week under notice, and exceeded the rate recorded in any week since the middle of April last. During the first nine weeks of the current quarter the annual death-rate in these towns averaged 13·7 per 1000, and in London the mean rate during the same period was 13·5. The lowest annual rates of mortality recorded in the 76 towns last week were 7·7 in East Ham, 8·0 in Walthamstow, 8·4 in Hastings, and 9·1 in Croydon; the rates in the other towns ranged upwards, however, to 23·1 in Brighton, 25·5 in Swansea, and 28·0 in Hanley and in Oldham. In London the recorded death-rate last week was equal to 16·0 per 1000. The 5196 deaths registered in the 76 towns last week showed a further increase of 29 upon the numbers returned in the five preceding weeks, and included 297 which were referred to the principal epidemic diseases, against 281 and 278 in the two preceding weeks; of these 297 deaths, 65 resulted from whooping-cough, 58 from diarrhœa, 53 from measles, 48 from diphtheria, 41 from scarlet fever, and 32 from "fever" (principally enteric), but not one from small-pox. The annual rate of mortality from these epidemic diseases last week was equal to 0·9 per 1000, corresponding with the rate in each of the two previous weeks. No death from any of these epidemic diseases was registered last week in Bradford, East Ham, Brighton, Tottenham, or in nine other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·7 in Blackburn, 2·9 in Burnley, 3·8 in Hanley, and 4·0 in South Shields. The deaths from whooping-cough in the 76 towns, which had been 69 and 61 in the two preceding weeks, rose again to 65 last week, and caused the highest annual rates, 1·1 in Oldham and 1·4 in Ipswich. The 58 deaths attributed to diarrhœa exceeded the number in the previous week by 3, and showed the greatest excess in Blackburn and South Shields. The 53 fatal cases of measles exceeded the number in any recent week, and caused annual rates equal to 1·2 in York, 2·0 in Burnley, and 2·3 in Hanley. The 48 deaths from diphtheria showed a decline of 10 from the number in the previous week; they included 9 in London and its suburban districts, 4 in Liverpool and Bootle, 3 in Manchester and in Newcastle-on-Tyne, and 2 each in Bristol, Hanley, Leeds, South Shields, and Gateshead. The 41 fatal cases of scarlet fever corresponded with the number in the previous week, and included 14 in London and its suburban districts, 4 in Birmingham and King's Norton, 7 in Liverpool and Bootle, and 2 in Blackburn. The 19 deaths referred to "fever" exceeded by 13 the number returned in each of the two preceding weeks; 3 occurred in Liverpool and in Manchester, and 2 each in Smethwick, Bolton, and Oldham. The number of scarlet fever patients under treatment in the Metropolitan Asylums and London Fever Hospitals, which had declined during the seven preceding weeks from 2810 to 2518, had further fallen to 2488 on Saturday last; 281 new cases of this disease were admitted to these hospitals during last week, against 308 and 264 in the two preceding weeks. The Metropolitan Asylums Hospitals contained 3 cases of small-pox on Saturday last. Of the 1484 deaths registered in London last week, 432 were referred to pneumonia and other diseases of the respiratory system, against numbers increasing from 167 to 387 in the seven preceding weeks; these 432 deaths exceeded by 10 the corrected average number in the corresponding week of the five years 1904–08. The causes of 41, or 0·8 per cent., of the deaths registered last week in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered last week were duly certified in Leeds, Sheffield, Bristol, West Ham, Bradford, Hull, Nottingham, Leicester, Salford, and in 44 smaller towns; the 41 uncertified causes of death in the 76 towns last week included 7 in Liverpool, 5 in Birmingham, and 3 both in Manchester and in Sunderland.

### HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 800 births and 797 deaths were registered during the week ending Dec. 4th. The annual rate of mortality in these towns, which had steadily increased in the five preceding weeks from 12·9 to 24·2 per 1000, declined again to 22·3 in the week under notice. During the first nine weeks of the current quarter the annual death-rate in these Scotch towns averaged 16·5 per 1000, and exceeded by 2·8 the mean rate during the same period in the 76 largest English towns. The annual death-rates last week in these Scotch towns ranged from 12·0 and 13·4 in Aberdeen and Leith, to 27·3 in Glasgow and 33·9 in Perth. The 797 deaths from all causes in the eight towns last week showed a decline of 69 from the high number in the previous week, and included 88 which were referred to the principal epidemic diseases, against 66, 77, and 98 in the three preceding weeks. These 88 deaths were equal to an annual rate

of 2·5 per 1000; the mean rate from the same diseases last week in the 76 English towns did not exceed 0·9 per 1000. The 88 deaths from these diseases in the Scotch towns last week included 43 from measles, 17 from whooping-cough, 11 from diarrhœa, 9 from scarlet fever, and 4 both from diphtheria and from "fever," but not one from small-pox. The fatal cases of measles, which had been 22, 36, and 49 in the three preceding weeks, declined again to 43 last week, of which 40 were returned in Glasgow. The fatal cases of whooping-cough, which had been 12 and 9 in the two previous weeks, rose to 17 last week, of which 8 occurred in Glasgow, 3 in Edinburgh and in Dundee, and 2 in Greenock. The 11 deaths attributed to diarrhœa showed a decline of 5 from the number in the previous week, and included 4 in Glasgow, 4 in Edinburgh, and 2 in Dundee. Of the 9 fatal cases of scarlet fever, 5 occurred in Glasgow and 3 in Edinburgh; and the 4 deaths from diphtheria included 2 both in Glasgow and in Dundee. The 4 deaths referred to "fever," of which 3 were certified as enteric and 1 as cerebro-spinal meningitis, included 2 in Glasgow and 2 in Aberdeen. The deaths referred to diseases of the respiratory system in the eight towns, which had increased in the five preceding weeks from 68 to 298, declined again to 265 last week, but exceeded by 151 the number registered in the corresponding week of last year. The causes of 23, or 2·9 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent.

### HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,142,308 persons, 568 births and 441 deaths were registered during the week ending Dec. 4th. The mean annual rate of mortality in these towns, which had steadily increased in the six preceding weeks from 14·8 to 21·0 per 1000, declined again to 20·0 in the week under notice. During the first nine weeks of the current quarter the annual death-rate in these Irish towns averaged 17·7 per 1000, whereas the mean death-rate during the same period did not exceed 13·7 in the 76 largest English towns, and 16·5 in the eight principal Scotch towns. The annual death-rate last week was equal to 22·1 in Dublin, 19·8 in Belfast, 25·3 in Cork, 23·0 in Londonderry, 13·7 in Limerick, and 19·5 in Waterford; the mean rate last week in the 16 smallest of the Irish town districts was equal to 18·2 per 1000. The 441 deaths from all causes in the 22 town districts last week showed a decline of 19 from the number returned in the previous week, and included 22 which were referred to the principal epidemic diseases, against 18 and 21 in the two previous weeks; these 22 deaths were equal to an annual rate of 1·0 per 1000; in the 76 English towns the mean rate from the same diseases last week was 0·9, and in the eight principal Scotch towns was 2·5 per 1000. The 22 deaths from these epidemic diseases in the Irish towns last week included 10 from whooping-cough, 8 from diarrhœa, 2 from diphtheria, and 2 from "fever" (enteric), but not one from measles, scarlet fever, or small-pox. The 10 fatal cases of whooping-cough showed a further increase upon the numbers in recent weeks, and included 6 in Belfast and 2 in Limerick. The 8 deaths from diarrhœa also showed an increase, including 3 in Belfast and 2 in Dublin. Of the 2 fatal cases of diphtheria one each occurred in Dublin and in Belfast; and the 2 deaths from enteric fever included 1 each in Dublin and in Cork. The deaths referred in the 22 towns to pneumonia and other diseases of the respiratory system, which had been 110 and 101 in the two preceding weeks, rose to 157 last week. The causes of 14, or 3·2 per cent., of the deaths registered in these Irish towns last week were not certified by a registered medical practitioner or by a coroner; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent., while in the eight Scotch towns it was equal to 2·9 per cent.

UNIVERSITY COLLEGE (UNIVERSITY OF LONDON).—The new botanical laboratories will be opened on Dec. 17th at 4 o'clock by Mr. D. H. Scott, LL.D., Ph.D., F.R.S. The Vice-Chancellor will take the chair.

## THE SERVICES.

### ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: J. A. Moon, to Royal Marines, Portsmouth; E. B. Pickthorn to the *Prince of Wales;* M. C. Langford to the Medical Department, Admiralty; J. E. Coad to the *Renown*, on recommissioning. Staff-Surgeons: W. S. H. Sequeira to the *President*, additional, to be lent to Yarmouth Hospital, temporarily; A. Woollcombe, to the *Charybdis*, on recommissioning; R. F. Clark to the *Brilliant*, on recommissioning. Surgeons: H. W. W. Townsend to the *Pembroke*, for Royal Naval Barracks; N. P. Hingston to the *Euryalus;* J. C. F. D. Vaughan to the *Haulbowline;* H. C. Devas to the *Cornwall;* and J. Bourdas to the *Pembroke*, additional.

The following qualified candidates for the Naval Medical Service have been appointed Surgeons in His Majesty's Fleet:—Martyn Henry Langford, Roderick Joseph Graham Parnell, Arthur Gordon Valpy French, Charles Dowall Bell, Archibald Fairley, John Parton Berry, Frank Lewis Smith, Walter Everard Lloyd, Francis Charles Searle, Albert Christoph Rusack, John Harding Baynes Martin, Cecil Gordon Sprague, and Thomas Charles Patterson (dated Nov. 5th, 1909).

### ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel H. Marks, on arrival in India, has been appointed to command the Station Hospital, Ferozepore. Lieutenant-Colonel W. Swabey assumed command of the Station Hospital, Aden, on Dec. 1st. Captain J. B. Cautley, Station Hospital, Cawnpore, has been directed to proceed to Bhamo for permanent duty in the Burma Division. Lieutenant-Colonel M. W. Russell has been appointed staff officer to the Principal Medical Officer, Eastern Command, vice Lieutenant-Colonel C. R. Tyrrell. The undermentioned officers, who are serving in India, are appointed specialists in the subjects stated: Captain J. H. Campbell, Brigade Laboratory, Allahabad, prevention of disease, from Sept. 14th; Captain A. H. Safford, Brigade Laboratory, Fyzabad, prevention of disease, from Sept. 16th; Major M. P. C. Holt, D.S.O., 3rd (Lahore) Division, advanced operative surgery, from Oct. 11th. Lieutenant-Colonel J. B. Forrest, returning from Burma, Major R. C. Thacker, from Karachi, and Captain W. MacDowall, from Ambala, have been appointed for duty in the Cork District; and Major E. S. Clark, from Nowshera, and Captain B. G. Patch, from Mooltan, to the Belfast District.

### SPECIAL RESERVE OF OFFICERS.

*Royal Army Medical Corps.*

Supplementary List: Lieutenant Wilson Ranson to be Captain (dated Nov. 26th, 1909).

### TERRITORIAL FORCE.

*Royal Army Medical Corps.*

2nd Home Counties Field Ambulance: James Dundas to be Lieutenant (dated Oct. 20th, 1909).

Lowland Mounted Brigade Field Ambulance: Lieutenant Robert B. Carslaw to be Captain (dated Oct. 7th, 1909).

2nd London (City of London) General Hospital: Major William H. White to be Lieutenant-Colonel (dated Nov. 9th, 1909). Captain Herbert P. Hawkins to be Major (dated Nov. 9th, 1909).

*Attached to Units other than Medical Units.*—Lieutenant Alfred A. Beeks to be Captain (dated May 26th, 1908). Lieutenant-Colonel John W. Ellis resigns his commission and is granted permission to retain his rank and to wear the prescribed uniform (dated Nov. 7th, 1909). Lieutenant John Hobbs to be Captain (dated Nov. 7th, 1909).

*For attachment to Units other than Medical Units.*—Lieutenant Charles Henry Bullen, from the 3rd North Midland Field Ambulance, Royal Army Medical Corps, to be Lieutenant (dated Oct. 1st, 1909). Captain (Honorary Lieutenant in the Army) Edmund William Herrington, from the 3rd London (City of London) Field Ambulance, Royal Army Medical Corps, to be Captain (dated Oct. 18th, 1909). Kenneth Mackinnon to be Lieutenant (dated April 1st, 1909). Percy Bertram Spurgin to be Lieutenant (date Nov. 16th, 1909).

### DEATHS IN THE SERVICES.

Deputy Inspector-General Frederick William Blake, R.N.,

aged 85 years, on Dec. 4th. He entered the service as surgeon in 1846, became staff-surgeon in 1855, fleet-surgeon in 1870, and retired with the rank of deputy inspector-general in 1879. He was assistant surgeon on the *Leander* during the Russian war in the Black Sea, 1854 (Crimean and Turkish medals).

Major Espine Charles Robert Ward, A.M.S. (retired), at his residence in Ireland, aged 61 years, on Nov. 28th. He entered the service in 1871 as assistant surgeon and became surgeon in 1873, surgeon-major in 1883, and retired in 1887. He served in the Zulu war in 1879 and in the subsequent operations against Sekukuni, including the storming of the stronghold (medal and clasp). He also served in the Boer war of 1881 and was present in the engagement at Madder Spruit, where he was slightly wounded (mentioned in despatches).

### JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The December issue of this journal, which contains the index to Vol. XIII., opens with a short biographical appreciation of Sir John Pringle, Bart., from the pen of Major H. A. L. Howell, R.A.M.C. John Pringle was intended for a commercial career, but while on a visit to Leyden he attended a lecture by Boerhaave, which so deeply impressed him that he determined to become a pupil of that celebrated physician. He afterwards went to Paris, and subsequently returned to Edinburgh. In 1742 Pringle became private physician to the Earl of Stair, who at that time commanded the British forces in Flanders, and was also appointed physician to the military hospital there. He retired from the army in 1758. From a list of his writings Major Howell shows that Sir John Pringle was "unquestionably the father of modern military hygiene," and a study of his works "proves that he was aware of many facts in connexion with military hygiene which most of us have considered as of comparatively recent discovery." "In conclusion," says the writer, "it is believed that to Pringle is due the first foreshadowing of the Geneva Convention of our own day." In the same issue Lieutenant-Colonel R. J. S. Simpson, C.M.G., R.A.M.C., continues his medical history of the South African war; and the address on Some Modern Views concerning Heredity and Variation, by Brevet-Colonel R. H. Firth, R.A.M.C., which was recently delivered before the Aldershot Military Medical Society, is reprinted. Major P. J. Freyer, I.M.S. (retired), makes some practical observations on the operation for total enucleation of the enlarged prostate.

### NURSES IN THE TERRITORIAL FORCE.

On Dec. 3rd Miss Haldane, sister of the Secretary of State for War, presented the badges to 110 nurses who have enrolled themselves in that force. The ceremony took place in the Royal Victoria Infirmary, Newcastle-upon-Tyne, under the presidency of Sir George Hare Philipson, consulting physician to the infirmary. After the presentation Miss Haldane gave an address on the Territorial Force scheme as it would apply to nurses, and outlined their duties and responsibilities. She congratulated the matron of the Royal Infirmary, who is the organising matron in the counties of Durham and Northumberland, on the success which had attended her efforts, and trusted that the full complement of nurses (120) from this district would soon be forthcoming. To this ceremony was added the presentation of prizes to the nurses of the infirmary as the result of their various test and certificate examination.

### ATTACK ON AN INDIAN MEDICAL SERVICE OFFICER.

A Reuter's telegram from Lahore, dated Dec. 19th, states that Captain J. E. Clements, I.M.S., superintendent of the Central Jail, Montgomery, has been stabbed in the back and seriously wounded by a Pathan prisoner. The chief gaoler was also wounded in the stomach by the same prisoner. A later telegram states that Captain Clements has rallied and is going on well.

### THE ARMY MEDICAL ADVISORY BOARD.

The Army Council has approved of the appointments of the following gentlemen as members of the Army Medical Advisory Board being renewed for a period of three years:—Dr. J. Rose Bradford, F.R.S., Sir C. Cameron, C.B., Dr. L. C. Parkes, Dr. M. S. Pembrey, and Sir F. Treves, Bart., G.C.V.O., C.B.

# Correspondence.

"Audi alteram partem."

## ABDOMINAL CRISES IN DIABETES.

*To the Editor of* THE LANCET.

SIR,—In THE LANCET of Nov. 27th is an annotation on the above subject recording two cases of diabetes in which an abdominal crisis occurred simulating acute intestinal obstruction, and it is mentioned that, although similar cases do not appear to have been reported previously, Grube has described in diabetes attacks resembling the gastric crises of tabes. The rarity of the condition leads me to think that a few notes of a recent case under my observation may be of interest. The patient was a lady, aged 25 years, who had been under my care during the last two years with severe diabetes. At first there had been marked improvement with alteration of diet and with the administration of sodium salicylate. The glycosuria rapidly diminished and there was great increase in weight. For 12 months she was able to resume carbohydrates, while continuing to take sodium salicylate. Then sugar reappeared, and she again came under my care in April, 1909. On this occasion, although similar precautions were adopted, there was not the same rapid improvement. The weight increased from 8 stones 4 pounds to 8 stones 11 pounds in three months, but the sugar never disappeared from the urine, diacetic acid and acetone were frequently present, and there was marked increase of the daily percentage of urea. To all outward appearance, however, she seemed well; she was always bright and cheerful and did not complain of fatigue. She returned to her home in the country in July, and I heard good reports of her progress until Oct. 30th, when she had sudden severe abdominal pain with slight sickness. The pain was located in the lower part of the abdomen, and was suggestive of colic due to appendicitis, but it was not associated with rigidity of the abdominal walls, and it yielded in the course of 24 hours with the use of warm applications. As she had recently been exposed to cold it was hoped that the trouble might be merely a severe attack of intestinal spasm. Four days later, however, vomiting returned and became persistent; the diacetic acid and acetone increased, and the patient rapidly lost flesh and strength. When I saw her on Nov. 6th she was bright and cheerful, there was no localised pain over the abdomen, though there was a general sense of discomfort. She told me that the vomiting occurred suddenly without being accompanied by nausea. There was some headache, not severe, and the pupils were both moderately dilated and did not react to light on ophthalmoscopic examination. Within a few hours, however, she became comatose and gradually sank.

In view of the readiness with which patients with diabetes suffer from tuberculosis, the peculiar type of the vomiting at first led me to think of tubercular meningitis, but the optic discs did not support this hypothesis, there was no indication of paralysis beyond the sluggish nature of the pupils, and the ending was far more rapid than is customary. Vomiting has been mentioned as a precursor of coma, but it is not a frequent symptom, and when, as in this case, it appears to be primarily associated with severe abdominal pain, it is easy to understand that an erroneous diagnosis of appendicitis may readily be made.

To compare such cases with the gastric crises of tabes is, I think, rather unfortunate. The symptoms are, to my mind, far more suggestive of vomiting of toxic origin affecting the central nervous system.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 29th, 1909. NESTOR TIRARD.

## THE VACCINE TREATMENT AND THE NEGLECT OF CLINICAL SIGNS.

*To the Editor of* THE LANCET.

SIR,—It appears to me that the system upon which the vaccine treatment of disease is being established gives cause for regret in that it asks but slight attention to clinical signs, though in the out-patient departments and in the wards of the hospital, physicians and surgeons have, till now, at any rate, been constantly urging their great importance before the

student. In some institutions, indeed, this modern treatment is being carried on somewhat independently of, or apart from, hospital work. In some cases the vaccine-therapist may scarcely have set eyes upon the patient. "Only let me have," says he in another case, "a sample of his blood, and I will treat his disease." This almost suggests the practice of the man who engages to supply the character of a person after merely studying a specimen of his handwriting. I deplore this neglect of the clinical method, and give herewith a marked instance of it.

Last week a lady was brought to me because of a glandular swelling beneath the upper part of her sterno-mastoid muscle, for the treatment of which she had previously been under the care of a highly accomplished vaccine-therapist. He had examined her blood, and at intervals had given her three injections of what I suppose was tuberculin, as, much to her alarm, he had told her that he thought her trouble was of tubercular origin—though apparently the blood test had not clearly indicated it. The swelling was slowly increasing in size, and she was now fearing lest an operation should be necessary. The case may well have been tuberculous, and she may have been ill-advised to leave the vaccine-therapist to go to a general surgeon. But the point of my remarks is this, that whilst she was under his care he did not (as I was assured) examine the teeth or look into the mouth. On my making an inspection, however, I found a chronic abscess about the stump of the first lower molar tooth of that side, for which I advised immediate extraction. In my opinion this was the actual cause of the trouble, though I think it quite likely that the septic adenitis may have been followed by tuberculous invasion of the damaged tissue.

The time surely has not yet arrived that the vaccine-therapist can rise superior to those methods of investigation which are taught as the A B C to students as soon as they begin clinical work. It is far more important in such a case to examine the teeth than the blood, and a neglect to do so is apt to bring the newer methods into disrepute—methods which at present are still upon their trial.

I am, Sir, yours faithfully,

Great Cumberland-place, W., Dec. 6th, 1909. EDMUND OWEN.

## THE THERAPEUTIC VALUE OF LIQUID AIR AND SOLID CARBON DIOXIDE.

*To the Editor of* THE LANCET.

SIR,—We have read with interest the paper by Dr. Reginald Morton in your current issue on "The Treatment of Nævi and other Cutaneous Lesions by Electrolysis, Cautery, and Refrigeration." To his main thesis we do not wish to take any exception, but we beg to differ from him as to the usefulness of liquid air. He says: "It is extremely difficult, even impossible, to use it in an efficient manner. Its liquid form is responsible for this, making it difficult to control, and impossible to make use of that most important adjunct—pressure." We have made an extensive use of this agent during the past two years in the treatment of lupus erythematosus, nævi, and "port-wine stains" with very gratifying results, and have not found that difficulty in using it which Dr. Reginald Morton indicates. We apply it by means of a piece of absorbent cotton-wool wrapped round the end of a small cane about 10 inches in length. This is immersed for about a minute in the liquid air in a Dewar's bulb, and on withdrawing it the wool is found to be saturated with the fluid. The wool is then pressed firmly against the part to be treated and no difficulty is found in graduating the pressure to the required degree. For superficial cases we have found solid carbon dioxide very good, but the action of liquid air is, in our experience, superior.—We are, Sir, yours faithfully,

STOPFORD TAYLOR,
Liverpool, Dec. 6th, 1909. R. W. MACKENNA.

## THE INFLUENCE OF DIET ON THE THYROID GLAND.

*To the Editor of* THE LANCET.

SIR,—I should be very sorry indeed to think that I had allowed an inaccuracy to appear in my letter of Nov. 22nd, but even after reading Dr. Chalmers Watson's comments I cannot admit that this has happened. The words I used were that "excessive meat-eating is a subject that has attracted a whole host of investigators," but they are now repeated by Dr. Watson as "a whole host of investigators have made a special study of the direct influence of diet on the thyroid gland." This elaboration and qualification do not come from me, and if, in its revised form, the statement is misleading the responsibility is not mine.

Dr. Watson clearly wishes to maintain that his experiments must be compared only with those undertaken subsequently to his own and with the special object of ascertaining the direct influence of a protein diet on the thyroid. They must not be compared with any of the earlier work dealing with the effects of a protein diet from any other standpoint. Can Dr. Watson have forgotten his own writings? He has told us[1] that his "research was primarily an experimental investigation into the nature of avian gout and the changes in the thyroid and parathyroid glands were, so to speak, an accidental finding." I do not wish for one moment to minimise the interest of his researches, but it would be incorrect to suppose that the effects of protein diets, whether in excess or the reverse, received no attention until he began to write his papers. For more than half a century this subject has been under investigation, and he need go no further than the ordinary catalogues and indexes of scientific literature to find the references for which he asks.

To the second part of my statement, that no other investigator has produced the enlargement and microscopical changes in the thyroid, I must also adhere. Again I cannot do better than quote Dr. Watson himself who, in recording his results,[2] claimed that "this is the first time that there has been induced experimentally in animals an enlargement of the thyroid gland." He now brings this statement up to date by the addition that I am the only investigator who since 1904 has experimented on the subject. He forgets that in the discussion that followed his paper before the Pathological Society in 1906, Mr. Edmunds brought forward a series of his own in which he fed rats on a purely protein diet, but failed post mortem to find any change in the thyroid gland.

I am, Sir, yours faithfully,

Queen Anne-street, W., Dec. 6th, 1909. DAVID FORSYTH.

## CIVILISATION AND THE CORSET.

*To the Editor of* THE LANCET.

SIR,—The tendency to-day to abandon artifice and live more naturally has always appeared to me to be a most hopeful feature of modern civilisation. This is especially so in dress, a field in which artifice abounds, often to the detriment of health. As one therefore who has for some years supported the crusade against corsets, I wish respectfully to protest against the views expressed by Mr. Heather Bigg in your issue of Nov. 27th. That the corset may be of great remedial value I should be the first to admit, and, in fact, could hardly deny in the face of such an authority as Mr. Arbuthnot Lane. I gather, however, from his article on the subject that he urges its therapeutic value rather than its general use.

Mr. Bigg in his letter begins by saying that women have found by experience that corsets are indispensable. How then does he explain the fact that the experience of many women to-day is that they are better in health, and far more comfortable, for having abandoned them, and that those who are brought up from childhood without them never feel the necessity for them? He gives the extra abdominal organ as a special reason for women needing corsets; but if a corset is effectively to drive out waste blood from the abdominal viscera, surely it would divert the pressure produced by the downward movement of the diaphragm, from its general distribution forwards and downwards, to a direction entirely downwards, and so be an increased strain on the extra organ in question. Mr. Bigg says that nature has ordained women to breathe pectorally, but surely artifice, not nature, is responsible for this. Modern physiology upholds the view that the corset is the cause of pectoral breathing in women. Hutchinson, in his "Applied Physiology," p. 195, makes the following statement:—"It is now generally admitted that this type of breathing in women is due to the wearing of corsets." The breathing of women who do not wear corsets bears this out, for it is as much abdominal and as little pectoral as in man.

[1] THE LANCET, 1907, vol. ii., p. 254.
[2] THE LANCET, vol. i., 1905, p. 347.

For healthy women to wear corsets habitually for the purpose of driving stagnant blood from the abdominal viscera seems to me to be an advantage entirely outweighed by the disadvantages of impeded respiration and restricted movement; and I cannot but think that the support of natural muscles, aided, if necessary, by suitable exercises, attains this end quite sufficiently. That a corset, however well-fitting, does impede breathing can be easily tested. Let any woman attempt to fasten her corset in its usual dimensions while holding her chest in a position of deep or even moderate inspiration and she will usually fail to do so. If she can do so, which is unlikely, the corset is useless for the purpose of increasing abdominal pressure.

In conclusion, I would ask at what age Mr. Bigg considers it advisable to begin wearing a corset. If the erect posture demands it, then we should be wise to put our babies into stays as soon as they begin to toddle. God forbid!

I am, Sir, yours faithfully,

CECIL E. FISH, M.B. Cantab.,
Vale of Clwyd Sanatorium, N. Wales.

West Worthing.

## SACCULI *NOT* DIVERTICULA.

*To the Editor of* THE LANCET.

SIR,—It was my good fortune to be present at a demonstration by Dr. W. H. Maxwell Telling on the disease of the colon with which you have associated his name in THE LANCET of Nov. 27th. After his demonstration I explained my views of the condition, and I believe that they met with his acceptance. They were expressed in the "Medical Annual" (Wright), 1909, p. 210, as follows:—

"Diverticula" of the colon, especially of the sigmoid, have been long known to pathologists. Only recently has their surgical importance been recognised, and chiefly as a cause of left-sided intra-abdominal suppuration or as "tumours" of the sigmoid which have been mistaken for cancer. More obscurity than probably belongs to the subject has arisen from the use of the term diverticulum as applied to these protrusions from the bowel, and small consideration shows that between them and the recognised diverticula there are many points of difference. It seems probable that all diverticula are of congenital origin. *All* coats of the intestine enter into their composition. All have a special vascular supply of their own. They are seldom if ever multiple, and are found at any age. The vermiform appendix is representative of this type in the normal subject. Meckel's diverticulum, due to arrested involution of the omphalomesenteric duct, has long been recognised as of surgical importance, and the existence of diverticula at different portions of the gastro-intestinal tract associated with small pancreatic outgrowths has been recently added to our knowledge of these interesting conditions. Of the traction diverticula due to the drag of a limited adhesion, nothing more needs to be said than that they ought to be classed separately from any other form.

The swellings observed on the colon do not answer to our description of a diverticulum at all; indeed, their origin is so different that the confusion caused by calling them diverticula should cease. They differ from diverticula in that they are never of congenital origin, and have consequently not been found in youth; are multiple; thin-walled, because the muscular coat of the intestine is usually absent in them; they are rounded in shape, do not attain to large size, and are practically limited to advanced life. In the urinary bladder, other parts of the gastro-intestinal tract, the gall-bladder, the vermiform appendix, and Fallopian tubes, similar swellings have been described; indeed, it is safe to say that they will be found if sought for in any of the hollow muscular-coated viscera. The cause in all is obscure, but in the colon as elsewhere, it is probable that chronic obstruction to the escape of the contents (constipation) and weakening of the wall are the determining factors. The suggestion that they are due to traction from little masses of fat must be received with caution, for it is a curious fact that many pathological conditions of the colon—even cancer and tubercle—are associated with localised deposits of fat in the bowel wall. In the urinary bladder, where they have been known longest, they have always been called sacculi, and this would appear to be the most suitable name for them elsewhere. In their pathology, however, they closely resemble the diverticula of which the vermiform appendix may be taken as a type. Like this, they may harbour fæcal concretions, and inflammation in them leads to the same results. It is therefore possible to find, as a consequence of sacculitis of the sigmoid, gangrenous perforation with peritonitis, ulceration, and perforation with left iliac abscess, or inflammatory thickening and fibrosis closely resembling a malignant growth of the affected bowel.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, Nov. 29th, 1909. RUTHERFORD MORISON.

## ANNUAL MEETING AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

*To the Editor of* THE LANCET.

SIR,—In your report of this meeting an inaccuracy so serious appears that I am sure you will correct it in your next issue either by inserting a correcting paragraph or this letter, as you may think the better thing to do. I refer to the following: Dr. W. G. Dickinson asked the President who were "the body corporate" referred to in the annual report of the College at page 9. Your report states that the President replied that "the body corporate" consisted of the past, present, and future *Fellows and* Members. As I was present I can vouch that what the President actually said was "the body corporate consists of the past, present, and future Members of the College." This is the reply also reported in your medical and lay contemporaries. There is a vital difference between your report of what the President said and his real reply.—I am, Sir, yours faithfully,

SIDNEY C. LAWRENCE, M.B., D.P.H., M.R.C.S.,
Honorary Secretary, Society of Members of the Royal College of Surgeons of England.

Lower Edmonton, N., Dec. 7th, 1909.

## THE HARD CASE OF THE LONDON STUDENT.

*To the Editor of* THE LANCET.

SIR,—After reading your excellent articles on medical education one feels that, indeed, the medical world is "out of joint." Main issues are so often missed, and as regards the question of "degrees for London students" the main issue is usually passed over.

The M.D. degree of most universities involves only a medical training. The degree is considered academic because it is conferred by a university. The arts and science training required are practically the same as for a licence. No degree in arts is taken in most instances, and excepting for preliminary work the whole training is technically medical. "There's the rub." With similar conditions of curriculum and examination there is a difference in title and in name which leads to jealousy and confusion. I place our great London medical schools on an equality with the medical departments of most universities, and I hold that those of us who took respectable positions in the class-work and examinations of those schools, and also took our licences to practise, are in no sense the inferiors, either in training or position, to the graduates of medical departments of universities. That the examinations of some universities go beyond the ordinary grade is true, and men holding those degrees are credited with the position their work has gained, but that any invidious distinction should be made in title or otherwise between the graduates and diplomates of approximately equal standing is absurd and unreasonable. The question stands thus. Is it just that London students who have passed through the training and examinations of a medical college equal in every respect to the constituent medical colleges of most universities, who have also passed examinations for qualifying diplomas recognised by the General Medical Council as sufficient to ensure registration on equal terms, shall be allowed to suffer under a technical disability in the eye of the public? It is not just! There can be no other answer.

The remedy is not far to seek. All that is required is the *will* to remove the evident injustice, and a disposition to sink small jealousies and petty self-seekings.

I am, Sir, yours faithfully,

Loughborough, Dec. 4th, 1909. J. B. PIKE.

## THE INFLUENCE OF MIND AS A THERAPEUTIC AGENT.

*To the Editor of* THE LANCET.

SIR,—In his remarks on Dr. Morison's views concerning the influence of mind as a therapeutic agent Mr. J. Foster Palmer would seem to condemn hypnotism entirely. The sentence, "when hypnotic suggestion takes the form of inducing the patient to believe what sound reason tells him to be impossible," might be taken as an admission that this is not always the case, but other passages, in which hypnotic suggestion is termed "induced insanity," "criminal offence," "the more execrable" because enfeebling the already feeble-minded, leave no doubt that the condemnation is intended to be absolute.

I will not enter into doctrinal considerations, but it may be pointed out that hypnotism does not always mean enfeeblement of will. A patient may, with the sane part of his mind, desire a healthy ideal, but may be kept, nevertheless, in hopeless degradation by a morbid obsessive idea. In such a case—chronic alcoholism, for example—rational persuasion, as we all know, may fail utterly, whereas the intermental influence of hypnotic suggestion may strengthen the

mind against unhealthy impulse, and often cures such cases definitely, twice in my experience in the course of five minutes. Such a result can scarcely be termed "parting with reason." In Dr. Morison's excellent letter there are, it is true, as in Mr. J. Foster Palmer's, sentences which read separately contradict one another, but taken as a whole the meaning of the writer is quite clear. Rational persuasion is to be preferred, but "for those in the portico of the lunatic asylum" any kind of make-believe is better than insanity. Delusive methods are, however, seldom necessary, for an intermediate plan which is neither simple rational persuasion nor make-believe deception is available. This is the elimination of error and the credencive induction by hetero-influence of the right and the reasonable. But I cannot see what objection there can be to inhibiting absolutely by hypnotic *cambriolage* the impulses of a hopeless inebriate, *if he cannot be rescued from slavery by any other means.*

I am, Sir, yours faithfully,

Paris, Dec. 5th, 1909. MORAL ORTHOPÆDIST.

## APPRENTICESHIP.

*To the Editor of* THE LANCET.

SIR,—The discussion by the County Council of the report of its education committee on the extent to which the scholars at London's elementary schools drift into unskilled labour, coupled with the interest of Sir John Knill, the new Lord Mayor of London, in the matter of apprenticeship points to a serious effort being made towards the organisation of apprenticeship under Government auspices. As you have given space to the debate at the London County Council I think you may be willing to publish a few words from one who is interested in the movement as a practical worker. There is a risk lest what is being really aimed at, which, by the way, has a large medical side, should be misunderstood.

The Lord Mayor seems to be in favour of a revival of apprenticeship under old conditions, when apprentices "lived in," but the public does not appreciate that by these words the modern sense of the term "living in" is not implied, under which adult shop employees are housed together on the premises of the shop or in dormitories in neighbouring buildings. The revival of the old apprenticeship system would make a lad a member of his master's family, sharing the family life and meals. Surely a revival of this system is impossible, and it would be a pity that anyone should confuse a very modern movement towards technical education with impossible mediævalism. No apprentice would in these days either consent to or be allowed to sleep under the shop counter or in any odd corner of the premises. Decent sleeping accommodation would have to be provided for him, and where the master lived over his place of business sufficient space would as a rule be unavailable, while where the master lived in a suburb the whole principle of such "living in" would be altered, if only because the expense to the apprentice of travelling to and fro would not be compensated for by his "living in." In the olden days of apprenticeship, the lad, being a veritable member of his master's family, received the same moral guardianship as the members of that family, but this would not now be possible for numerous reasons, one being that the employer of labour often delegates his responsibility towards his own children in this direction to a schoolmaster. It is probably desirable that boys and girls just leaving school should continue to live with their parents; it is wrong that they should live anywhere where they are not under supervision.

Let us, then, leave "living in" out of the question. Apprenticeship in London in the future cannot as a rule be associated with any such practice, but must be a system under which the boy or girl beginning business is placed during working hours, with some arrangement about premium, for a definite time with an employer. It has been urged by some interested in this matter that trade schools are a better solution of the question how to increase the amount of skilled labour in this country than any attempt to revive apprenticeship, and the hygienic conditions under which children are taught in these schools are certainly superior to those existing in the average factory or workshop. The large factory run by a limited liability company, where no interest would, or could, be taken in individual apprentices, is not under consideration; at such places the hand is only taught one process and never learns a complete trade. The fact that general education is continued in the trade schools, so many hours per week being given to it, is an important point in their favour. Here we have something to replace the interest in the general welfare of the apprentice that was manifested by the old-time masters. If trade schools could become a complete and full organisation I grant that the system would be ideal; but expense alone makes this impossible, and some form of apprenticeship must go hand-in-hand with trade schools. As an alternative to the general education in trade schools we have evening classes, but they require coöperation on the part of the master, and also a great deal of care is called for from the parents, so that overwork may be guarded against. Also at these schools there is always a temptation to work at subjects connected with the apprentices' trade and not at general education. Mr. Cooper, speaking from the labour benches in the County Council debate on the subject, urged that a larger supply of skilled labour will not create the demand seems unfortunate for two reasons. First, the foreigner is often to be found in London in positions of trust as the foreman or the skilled workman performing the more highly-finished and difficult processes in a workshop, pointing apparently to the fact that there does not exist a sufficient supply of Englishmen to fill such posts. I do not know how far this is general, but two trades occur to me where British workmen are found in inferior positions—viz., that of the optician and the ladies' tailor. Second, if the young skilled workman cannot find work at home, surely he might seek it in many colonies. The ranks of unskilled labour may there be as overfull as they are at home, but the master of his trade should surely have a better chance of finding a market. It is because so many of the unemployed become a medical charge on the community that I address this letter to you. So many of the unemployed unfortunately become sooner or later "unemployables," filling our infirmaries and hospitals and putting a heavy burden on the shoulders of the skilled and thrifty among the community. The authorities, those of the Poor-law and those of the charitable organisations and hospitals alike, which deal with such problems feel that every year it becomes of more importance from the public health point of view that a greater security of return should be enjoyed by the wage-earning classes. The apprenticeship movement is towards a better equipment, mentally and morally, of the youth of this country, and medical men might well give it their support and sympathy. Both properly run trade schools and properly organised machinery for apprenticing children on their leaving school are desirable from a public health point of view.

I am, Sir, yours faithfully,

A WORKER ON THE APPRENTICESHIP AND SKILLED
Dec. 1st, 1909. EMPLOYMENT ASSOCIATION.

NURSING ASSOCIATIONS AND MIDWIVES.—At the annual meeting in London on Dec. 1st of the Sussex County Nursing Association Mr. A. G. R. Foulerton, medical officer of health of East Sussex, stated that instead of losing 10 infants out of 100 in East Sussex last year they had lost 6 or 7, and he attributed this low mortality to the good nursing of the maternity nurses from the association. Further, out of 1800 women of the working classes attended in confinement only 4 died, death being absolutely unpreventable in 3 cases. These figures point to the good work of the Nursing Association, and those boards of guardians who do not, as they are legally empowered, subscribe towards the association are to be urged to make a contribution. Boards of guardians will probably find in the near future that it will be far more ecomomical to support these nursing associations than be compelled to make provision for innumerable maternity cases, for in April next, when the Midwives Act of 1902 comes fully into operation, no untrained women will be permitted to practise. Dr. F. H. Champneys, chairman of the Midwives Board, who was present, said the great difficulty in the question of midwives was in the rural districts, but of the 1408 successful candidates since April last 33 per cent. intended practising in the rural districts. That showed, he added, a steady influx of the women they wanted, who were prepared to practise among the poor. There was no reason to fear a serious shortage until April next, but a redistribution might be necessary and should be possible.

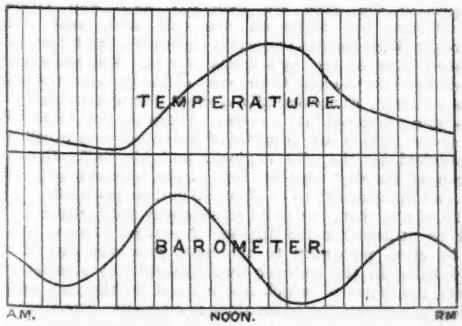
# THE PRESERVATION OF DRUGS AND INSTRUMENTS IN THE TROPICS.

(FROM A BOMBAY CORRESPONDENT.)

THERE are certain things which the medical man who has never lived in the tropics can hardly realise, but these things should be known to our colleagues at home, that they may appreciate the difficulties under which some of our work is done.

We cannot open a bottle of compressed drugs without being reminded, by the care bestowed in sealing it, of the risks to which the contents are exposed in tropical countries. Metallic capsules, paraffin-soaked corks, and absorbent cotton-wool within the bottle, would appear to ensure safety, but it seems to be only a matter of time for moisture, the great enemy, aided by heat, to modify, and in some cases to destroy, the value of the contents. The packing is doubtless performed with every known precaution and the drugs are freshly dried; still damage occurs in a period which varies with local conditions. Bombay, Colombo, and Singapore may be taken as typical of the worst localities where heat, light, and moisture combine to produce the most destructive effects upon all organic substances. Vegetable drugs in the form of leaves and roots, although compressed tightly in bales, cannot be stored for many weeks during the monsoon without being attacked by fungi which destroy the parts affected. Deliquescent salts by the absorption of moisture alter their weight value and compounded drugs in time lose their value by the chemical interaction of their constituents.

The penetration of moisture into closed vessels is due to two principal causes. The daily fluctuation of temperature in the air produces an alteration of volume, which passes from a minimum just before sunrise to a maximum between half-past 2 and 3 o'clock in the afternoon. If we assume a daily range of temperature equal to 15° F. the alteration in volume of the free air would be almost 3 per cent., but if enclosed in an air-tight and rigid vessel it would produce a pressure equal to 60·42 pounds per square foot of internal or external pressure, according to the hour at which the vessel was sealed up. The other cause is due to changes of barometric pressure that take place twice daily, having their maximum at about 10 o'clock, morning and evening, and their minimum at about 4 o'clock, morning and afternoon. The ordinary range is one-tenth of an inch, but it extends to half an inch at times, and when the barometer falls to that amount the internal pressure on a box, a glass case, or bottle, if tight and rigid, is increased by 35·2 pounds per square foot. The enclosed air, if allowed to expand, would increase by 2·8 per cent. The subjoined curves represent the mean diurnal fluctuation of temperature and barometric pressure at Bombay; the vertical lines, representing hours, enable the reader to observe how they act in relation to each other.




The two influences of temperature and pressure act in opposition to each other from about 6 in the morning in Bombay until 9.30. From this time until 3 P.M. their joint influence is in favour of expansion, and afterwards until 10 P.M. their joint action causes reduction of volume. After this and until 6 A.M. they act in opposition. They rarely balance each other, and the result is an almost constant change of volume and temperature throughout the 24 hours, and with these a constant change of atmospheric humidity. A movement of air is thus set up in all imperfectly closed vessels that carries water vapour in and out, and if any absorbent material lies within the vessels it is likely to absorb moisture to some extent. The same influence that carries in moisture introduces dust, but whilst some of the moisture may be carried out again the dust remains as it falls in the still atmosphere within. Absolute and permanent air-tightness seems only possible when the vessel is of metal and closed with solder. The extreme changes to which goods sent from England may be exposed in the tropics is indicated in the subjoined table, which shows how much water in a state of vapour may be contained in a cube of air with a side of 10 feet when saturated:—

| Degrees of temperature (Fahr.). | Water vapour in 1000 cubic feet. | Degrees of temperature (Fahr.). | Water vapour in 1000 cubic feet. |
|---|---|---|---|
| 32 ..... | 0·30 lb. | 82 ..... | 1·72 lb. |
| 42 ..... | 0·44 ,, | 92 ..... | 2·36 ,, |
| 52 ..... | 0·62 ,, | 102 ..... | 3·20 ,, |
| 62 ..... | 0·89 ,, | 112 ..... | 4·33 ,, |
| 72 ..... | 1·25 ,, | 122 ..... | 5·84 ,, |

In London the mean annual temperature is 49·2° F., while that of Bombay is 79·13°. The mean relative humidity in these places is 82 and 77 per cent. respectively. By reference to the above table it will be found that the corresponding weights of water vapour are 0·57 and 1·135 lb., the latter being 2·22 times the former. On August 3rd of this year the moisture in the air of Bombay weighed 1·56 lb. per 1000 cubic feet.

The various modes of closing bottles and other vessels with wax, paraffin saturated cork, rubber rings or washers, are all affected by changes of volume, temperature, or humidity of the air, that swell, shrink, crack, or decompose them. The evil effects of air leakage are most apparent in vessels that are not full. A vessel whose contents leave 50 per cent. of air space would be liable to a leakage of 1·43 per cent. of its contents under a change of temperature equal to 15° F., and, in the rainy season, when the air often contains 1·2 pints of water in vapour form per 1000 cubic feet, it is not difficult to imagine how the *breathing* action of any imperfectly closed case may affect its contents. Stores in India may, for many days together, contain an atmosphere of this kind, and the only mitigation possible is the admission of ample light with free ventilation as soon as the outer air is found to have become less moist. Absolute dryness in the air of a closed package may be left out of practical consideration on account of the extreme difficulty of obtaining it, but as all materials may be preserved in good condition for a certain time in an atmosphere containing *some* moisture it will suffice to consider the available means for this purpose. And as a soldered tin case is recognised as the most completely closed vessel, attention will be mostly directed to vessels having lids that must be opened occasionally, even if at long intervals. The tightness of barrels is far from complete in India. If filled with water or with any watery liquid there is a steady evaporation through the wood unless it is kept in a very damp atmosphere; if filled with oil and exposed to the sun or to a dry wind the oil will begin to leak owing to evaporation of moisture from the wood which the oil does not replace. Boxes built of wood, whose grain lies in different directions, cannot be kept airtight owing to shrinkage and swelling, due to changes of atmospheric humidity. The grain of the lid and the sides of a box do not all lie in the same direction, and as paint or varnish are no complete protection against the penetration of moisture the movement of shrinkage and swelling in time causes air leakage.

Tin and other rectangular boxes of metal always leak at the joint of the lid, whatever may be said to the contrary. The tightest metallic cover joint, setting aside those that are closed with the aid of screws, is made like that of a tea or coffee canister, but with the following difference. The neck, about 1¼ inches high, is tapered with a slope of one-sixteenth in two inches. The cap or cover may be four inches deep and is cylindrical in shape. The edge of the mouth is not stiffened by folding. It must fit tight over the neck when pushed down to within half an inch of the shoulder of the box. The joints of the sides of neck and cap that come in contact must be quite smooth and even. The result is a flexible cylindrical cap fitting on to a rigid

conical neck, forming a true contact joint all round which may be closed tight without sticking. A little oil or vaseline facilitates the use of this lid. Within the lid is a small hook of wire on which may be hung a bag with quicklime to absorb moisture from the contents of the box, which may be made square or round. The lid may be made up to 9 inches in diameter. This box has seen many years of service in Bombay for the preservation of the most diverse materials.

Although rectangular tin boxes do not close well, and wooden boxes have the faults already mentioned, a very useful combination may be made of the two materials, the one supporting the other. A useful dry chest may be made from a good packing case of suitable size. The case is put in good repair and closed. The lid is then cut off, along with three or four inches of the body to form a ledge. The sawn part of the body is then planed true and level, and rubbed with chalk. The lid is similarly treated until when rubbed on the body the chalk mark is transferred all round. The hinges are applied from the outside and screwed in place while the lid is pressed down with weights. The interior of the box and lid are lined with tin-plate or zinc, which is tacked round the edge of the lid-joint, but does not encroach upon it. Hooks are added on the outside to keep the parts in close contact when shut. A small amount of quicklime in a box or bag placed near the top of the box will keep the air dry enough for the protection of books, papers, instruments, and other things. Protection against the white ant may be obtained by painting the exterior of the box with mineral spindle oil, which is worth about 20 pence a gallon. This oil sinks into the wood and imparts such a bitter, unpleasant taste to it that vermin avoid it.

The preservation of instruments, especially if made of steel, has of late years received attention in India, as may be seen in the use of nickel plating and of metallic racks for holding them. Leather, velvet, and cloth linings for instrument cases are still much used, and as these materials are all very absorbent they communicate moisture readily to all unprotected steel surfaces and to cutting edges, such as lancets, knives, and hypodermic needles. From information obtained among operative cutlers it appears that surgical instruments are very much neglected in India, especially among medical men trained in the country. The dirty condition in which they often arrive for repairs indicates gross carelessness which may have caused many an unrecorded disaster, and as leather- and velvet-lined cases are the most commonly used the exposed steel surfaces are often pitted with rust. The people of India, who will make any sacrifice for the sake of ceremonial purity, are very indifferent to many of the requirements of cleanliness and sanitation.

Next to plated metal the best material for cases seems to be wood that has been soaked in paraffin wax by immersion in the hot material, and stoving until the surplus drains off. Bay-wood so treated gives good results either for the case itself or for linings and trays. It must be dovetailed, nailed, or screwed together, as glue will not adhere to it. Vaseline has been found to offer less protection to fine instruments than what is known as neutral oil, which would seem to imply that the vaseline has not been properly washed after refining.

Preservation of goods by cold storage has made little progress in India, although the 30° increase of average temperature above that of England renders it so much the more desirable, but it is, for the same reason, more costly than in a temperate region. Cold stores will become a necessity in India as soon as the fish supplies of our large sea-coast cities are obtained in a modern and systematic manner, and then the importers of drugs and instruments that suffer deterioration may insure their property against loss while in stock.

PROPOSED ADDITIONAL ASSISTANT MEDICAL OFFICER FOR THE LONDON COUNTY COUNCIL.—At the meeting of the Education Committee of the London County Council on Dec. 8th, the general purposes sub-committee presented a report upon the work of the medical department (education), and recommended that to meet the increasing pressure an additional assistant medical officer in the public health department should be appointed at a commencing salary of £500 a year, rising by annual increments of £50 to £700 a year. The consideration of the report was postponed.

# DISPOSAL OF SEWAGE IN TORONTO.

(FROM A CORRESPONDENT.)

TORONTO is situated on the northern shore of Lake Ontario, facing south, on a plateau gently ascending north for a distance of three miles, when an altitude of 220 feet above lake level is reached. It extends for a total distance about eight miles along the lake. The topography is fairly uniform, with an even slope to the shore. The most populous portion of the city extends for a distance of about two miles along the shore of the harbour. This harbour is a natural basin formed by a sand ridge known as The Island, which encloses it on the south and partly on the west. The mainland on which the city stands is its northern boundary, while the eastern part of the harbour is bounded by marshy land through which flows the river Don. The harbour is roughly semicircular and about one and a half miles in diameter. It has two openings, one on the west between the mainland and the island, a distance of less than half a mile, and a considerably smaller entrance to the east, named the Eastern Channel. Owing to the narrowness of these channels the water is practically stagnant.

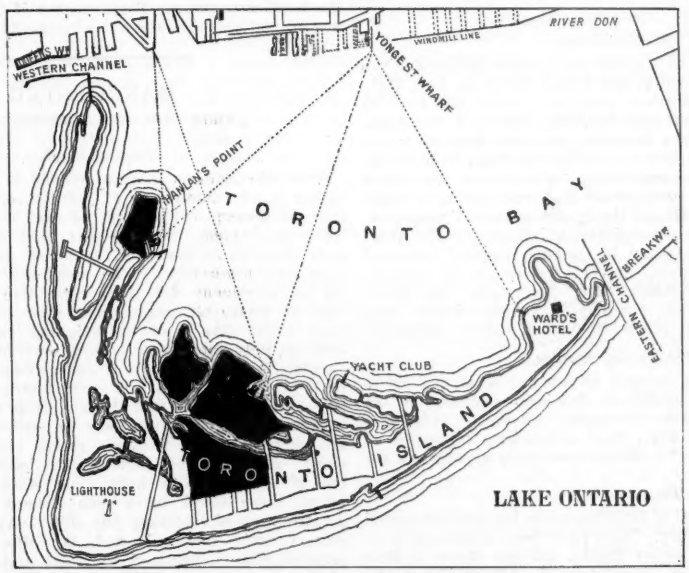
Since the year 1833 or thereabouts, when Toronto was known as York, its sewers have emptied themselves into the harbour. In 1834 Sir R. Bonnycastle, who made a report concerning the state of the harbour, advised that the sewers should not be constructed so as to discharge into it. Mr. K. Tully, provincial surveyor, wrote as follows on the same subject in 1855: "The deposits from the sewers of the city into the harbour are much more considerable than would at first be supposed. From experience in the construction of wharves, &c., it has been found that from Conge-street, on the west, in distance about midway of that part of the city fronting the harbour, to the river Don on the east, the end of the harbour, the average depth of deposits from sewers alone is not less than two feet; taking the distance to be 5000 feet, with an average breadth of at least 300 feet, we have a quantity equal to something like 100,000 cubic yards, a very serious amount considering it only extends over a period of 20 years." Mr. Tully also recommended that the sewers should no longer be led into the harbour. Matters, however, remained as before, and when the fact is taken into consideration that during these 70 years Toronto has immensely increased in area and that its population has advanced by leaps and bounds the condition of the harbour at the present time may be easily imagined.

The sewerage system of Toronto is fairly complete for collecting sewage and rain water. It is what is known as the combined system, with the exception of an outlying suburb, which has a separate system and which will be described at the conclusion of this paper. Most of the sewers run in a southerly direction at right angles to the shore of the lake and harbour, but a few run east and west. The general result is that two-thirds of the sewage is discharged into the harbour. Those sewers which run at right angles to the lake are generally kept well cleansed by storms, but those on the east and west streets have gradients too flat to cleanse themselves, and have to be flushed more or less by artificial means. Two large sewers discharge into the lake to the west of the harbour, the larger one of which was originally a creek (Garrison Creek), but has been converted into a sewer. There are about 290 miles of sewers which are admittedly well kept and excellently supervised by the city engineer and his staff. Gaugings taken of the dry weather flow in the main sewers in 1908 showed the quantity to be about 73 gallons per head.

There are, then, two valid reasons why the harbour should not be utilised for the disposal of sewage. One is that it is in close proximity to the most populous part of the city, being in the summer time traversed by steamers and boats, the routes of which are marked on the map and to whose passengers the odour alone is offensive. The other and by far the more important reason is that which concerns the water-supply. A considerable part of the water-supply of Toronto is derived from the lake by means of pipes laid on the bottom of the harbour which cross the island, the intake being at a distance of nearly 2000 feet from the southern or outer shore of the island. As already mentioned, the bottom of the harbour is covered to a depth of some feet with sewage

deposit; it is therefore always possible that the contents of the pipes may become contaminated by accidental leakage, and in any event the intake of the water is too near the deposits of sewage.

In 1907 there was a good deal of agitation in connexion with the water-supply, and the medical officer of health, in addition to making the usual bacteriological examination of the water, also had it analysed during the three autumn months. The results were not satisfactory, and he advised that the citizens should boil the water before using it for drinking purposes. This warning further alarmed the inhabitants, who demanded filtration of the water-supply, and from that date no strong objections have been brought against providing money for schemes calculated to ensure as pure a water-supply as possible. But action in Toronto, I am glad to say, did not have its origin in a scare. The movement for securing better conditions than those existing took practical shape about 20 years ago, for in 1889 Messrs. R. Hering and S. Gray, well-known civil engineers of New York, were called in by the city authorities of Toronto to advise as to an extension of the water-supply and the disposal of the sewage. They naturally said that if it were desired to continue the water-supply from the lake the sewage must be removed to a location so far distant from the intake that there could be no possible fear of contamination from this source. They pointed out that there were two alternative methods of dealing with the sewage. One was land treatment, which they dismissed as being too expensive and as requiring too great an area of land. The other alternative was discharge of the sewage into the lake at a point outside the harbour either in a crude state or after artificial treatment, and they decided in favour of discharging the sewage in a crude state into the lake at a somewhat considerable distance from the city. They recommended for this purpose that two large intercepting sewers should be constructed, the first of which, or high level sewer, should intercept the drainage of the greatest area that could be economically conducted to the outfall by gravity, while the second, a low level sewer, should intercept those sewers which did not run into the higher one.



Sketch map of the harbour and island of Toronto.

With certain modifications these plans are to be closely followed, and it was decided some few months ago that the work of constructing the high level sewer should be commenced. The present plans provide for the building of two intercepting sewers which will run parallel to the shore from Garrison Creek sewer, slightly to the west of the western end of the harbour to a point nearly at the eastern extremity of Ashbridge's Bay, a distance of two miles from the harbour. The departures from the plans of Messrs. Hering and Gray are that the sewage is not to be discharged into the lake in a crude state, but is to be treated in the vicinity of the outfall which will be nearer the city than that suggested by Messrs. Hering and Gray, for which purpose sufficient land has been purchased. Owing to this fact the intercepting sewers will not be so long as those proposed by the New York engineers, but in all other essential details the plans are practically identical.

Calculating somewhat roughly, the high-level intercepting sewer will be placed at an average distance from the lake shore of between 2500 and 3000 feet. This sewer will receive the drainage of the whole of the district to the north, that is to say, the sewage of by far the greater part of the city. The low level sewer is to be situated at a distance of 2000 feet or so from the high level sewer, and is intended to intercept the drainage between the two intercepting sewers, largely trade waste, for although factories are not numerous in Toronto as yet, the city is developing and no one can set bounds to the directions or extent of its progress. The intercepting sewers are to be constructed of brick and concrete, and will receive only the dry weather flow, plus a small quantity of rainfall; the excess during heavy rains will be allowed to continue its natural course. No house connexions will be taken into the interceptors, all sewage entering at street intersections, where the main sewers meet the interceptors. The high level intercepting sewer will vary in size from 6 feet to 10 feet in diameter, and will be so laid that the contents will have a velocity of 4 feet per second. The maximum diameter of the low level intercepting sewer will be 5 feet. Both the intercepting sewers will be five and a half miles in length, and in their course will pass under the stream at the east end of the harbour, named the Don. The low level intercepting sewer will be pumped into the channel at the disposal works near the outfall, the channel carrying the drainage from both intercepting sewers into a small basin, when treatment will follow. First, the sewage will be run through screens, which will remove the coarser matter in suspension, and will be then passed into sedimentation tanks, which are to be built "hopper" shaped, somewhat after the style of the "Dormund" tanks, and similar to some of the sedimentation tanks now installed in Birmingham. The liquor after remaining in the tanks for the usual period of three hours will be discharged over weirs into effluent carriers and will flow by gravity into the main carrier which will convey the sewage thus treated into the lake to a distance of 3500 feet from the shore. It may be stated that the lake at this point is 30 feet deep. The part of the lake from which Toronto derives its water-supply is distant about five miles to the west of the site of the proposed sewage disposal works, and observations have shown that the trend of the lake current is chiefly in an easterly direction—that is, in a direction away from the intake. It is considered that the high level intercepting sewer, which will be completed, it is estimated, in two years' time, will be capable of conveying the sewage of the greater part of the city to the disposal plant, thus relieving the harbour to a very large extent. When both sewers have been built and are in working order the entire mass of the sewage will be removed beyond the danger zone. The above is a broad description of the sewerage system which is to be introduced into Toronto. It should be stated that Mr. R. Hering of New York and Mr. J. D. Watson of Birmingham, England, visited Toronto some few months ago to consult the city engineer and to advise on the proposed system for disposing of the sewage, and that both cordially approved of the plans about to be carried out.

Owing to the impossibility of connecting the Woodbine district to the East of Toronto, which had no drainage system, with the city sewers, and owing to the rapid increase of population in the district, it was found to be absolutely

necessary that something should be done to improve its sanitary conditions. The municipality of East Toronto procures its water-supply from a point three-quarters of a mile east of this district and as the board of health objected to crude sewage being deposited in the lake, it was decided to lay a sewerage system and to construct septic tanks and bacteria beds to treat the sewage. The drainage area of the district is 185 acres and the population in the summer is in the neighbourhood of 11,000 persons. 18,000 feet of sewers were laid to convey an estimated sewage of 550,000 gallons daily. The disposal works consist of 3 septic beds and 12 bacteria beds. When treated the effluent is discharged into the lake.

From the foregoing description of the alterations designed and in progress it will be gathered that in the course of a few years the city should have a satisfactory system of sewage disposal.

By the courtesy of Mr. Charles H. Rust, city engineer of Toronto, and of Mr. A. C. D. Blanchard, assistant engineer in charge of the drainage department, I was afforded every facility for acquiring information with respect to the sewerage system of Toronto.

## BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

*The University.*

THE annual dinner of the past and present students of the Medical School was held at the Grand Hotel on Nov. 25th. Professor J. T. J. Morrison presided. After the toast of "The King" had been honoured, Mr. Charters J. Symonds, senior surgeon to Guy's Hospital, proposed that of "The Medical School." Professor H. Gilbert Barling, Dean of the Medical Faculty, in responding, referred to the many changes which had occurred in the staff, and especially to the death of Dr. A. Foxwell and the appointment of Professor A. Robinson to the chair of anatomy at Edinburgh. Dr. O. J. Kauffmann, senior physician to Queen's Hospital, proposed the toast of "The Guests," and this was responded to by Sir James Barr and Professor Peter Thompson, the newly appointed professor of anatomy. Musical items were rendered by Mr. B. A. Lloyd, Dr. Walsh, and Dr. Aitken.

*The Huxley Lecture.*

This lecture, which is open to the public as well as to friends of the University, is delivered annually by an eminent investigator in biological science. This year Professor Bateson, F.R.S., gave a masterly exposition of "Mendelian Heredity," a subject peculiarly appropriate for a Huxley lecture.

*Priestley Relics.*

A valuable collection of Priestley relics has been presented to the University library. They have been continuously in the hands of the Priestley family, and the donor is Miss S. P. Wainwright, a great-great-granddaughter of the discoverer of oxygen. The gift includes about 70 books from Priestley's own library and bearing his book-plate, most of them being volumes of his own works. Among them may be noted "The History and Present State of Electricity, with Original Experiments by Joseph Priestley," published in 1767 and dedicated to the Earl of Morton, P.R.S., and "The History and Present State of Discoveries Relating to Vision, Light, and Colours," dedicated to the Duke of Northumberland and published in 1772.

*The Hospitals of Birmingham.*

A special course of lectures on Birmingham institutions is being given in the University under the auspices of the Workers' Educational Association. On Nov. 25th Alderman Lloyd lectured upon "The Hospitals of Birmingham," the chair being occupied by Professor Priestley Smith. The oldest institution is the General Hospital, promoted by Dr. Ash in 1765 and opened with 40 beds in 1779. The expenditure on hospitals now amounts to £96,125 a year. Much attention was paid by the lecturer to the right use of hospitals and the possibility of rate aid at some future time.

*Birmingham Medical Mission.*

The thirty-fourth annual report of this institution shows that 7413 cases were treated in the past year, in respect of which 32,421 attendances had been made. The whole work of the institution, medical, evangelical, and social, is carried on at an expenditure of less than £1300.

*Guest Hospital, Dudley.*

At the annual meeting of subscribers to this hospital it was stated that, having regard to the improved financial position of the hospital owing to the munificent bequest of the late Mr. Hugh Lewis, the committee felt that greater completeness and efficiency should be aimed at, and the following improvements were recommended: (1) the reconstruction of the lavatories and bathrooms in the men's wards; (2) a new detached building for surgical and ophthalmic outpatients, and possibly a dental department; and (3) a new boiler for the laundry and supply of hot water to the hospital. An enlargement of the children's ward is under consideration.

*Crick District Council and the Medical Officer of Health.*

The medical officer of health for the various councils comprised in the Mid-Warwickshire joint sanitary district has officiated in that capacity for the Crick rural district council. Owing to the withdrawal of Yardley from the combination, and the resignation of Mr. A. H. Wilson, the Crick council has to make a fresh appointment. The Local Government Board urge the appointment of a whole time medical officer by the mid-Warwickshire joint sanitary committee. There is, however, a strong feeling in the district in favour of the appointment of a local practitioner, and the council has written to the Local Government Board asking if it would continue as now to pay half the salary of a local man.

Dec. 6th.

## MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

*Hospital Sunday.*

THE collections on Hospital Sunday do not do credit to any claims to, or assumptions of, philanthropy that Manchester may put forward. This must be said, even after allowances have been made for the fact that many of the well-to-do live out of town and that the churches and chapels may also suffer from "the week-end" habit. It would be so very easy for those who live away, and those who go away, to arrange that their contributions (which they would have been so delighted to add to the collections, only unfortunately they were out of town) should be given by proxy that it is quite unaccountable that that little arrangement was not carried out. In the meantime the old custom holds that the few, those whose names are to be found among the subscribers to most of our institutions, are supporting the hospitals rather than the many. The many may not be able individually to give much, but if they gave a little, just what they could well afford, there would be a rich harvest for the hospitals. At the annual meeting the other day the Lord Mayor (Mr. Charles Behrens) said he was thoroughly dissatisfied with the result of the fund, and also with the cost of its working—over £200 to collect £3600. He said that during his year of office he intended to do all he could to make the fund more effective. He should be extremely sorry to see the municipalisation of charitable institutions as he believed they could be managed more economically and sympathetically by voluntary workers. The Mayor of Salford (Alderman Snape) agreed with the Lord Mayor that the sum was beggarly, and suggested that there should be a small committee in connexion with every church where the collections were made. The treasurer said he had been distressed about the fund for many years. The Dean (Bishop Welldon) questioned whether February was the best time of the year to make the collections, as many others have done before him. He spoke somewhat severely about the insufficient sense of public duty on the part of influential citizens, some of the richest of whom did not discharge their public duty at all, and "the only reason that he should desire that the hospitals should come on the rates was so that these citizens should not escape the burden of their upkeep altogether." It remains to be seen whether the people of Manchester and Salford will be persuaded or shamed into an increased sense of their duties to those less fortunate than themselves.

*Treatment of Cancer.*

At the annual meeting of the Manchester Christie Hospital (Cancer Pavilion and Home), which was held on

Dec. 3rd, some interesting work was reported. During the last year 110 in-patients and 68 out-patients were treated, as against a total of 156 in the previous year. Of the 93 new cases, 37 were males and 56 were females; 9 of them were recurrent after previous operations when first admitted to the hospital. During the past year a permanent abode was provided for 63 patients who could not be properly treated at home. All of them were admitted in an advanced stage of the disease, too late to allow of any chance of very much benefit, to say nothing of cure, but with the hope of alleviating suffering as much as possible during the remainder of their lives. All died in the hospital, and so the death-rate is much higher than that of any general hospital. The Lord Mayor, who was in the chair, and Sir Edward Donner, in moving and seconding the adoption of the report, spoke feelingly on the subject of cancer, and the former said, "the only consolation was that the whole medical profession was bent on the discovery of the causes of, and the cure for, cancer," while the latter paid a well-merited tribute "to the matron and nurses who took charge of the cases, which must often be of an extremely trying nature." Professor R. B. Wild made some valuable observations on cancer research, and "wished that the other hospitals in Manchester would join in inaugurating a fund for the purpose of coördinating research as to cancer, because he believed that in that way only could they obtain any real value from the study of cases of cancer." During the last 17 years they had tried every method of treatment that had a reasonable basis of probability that it might do good, some 20 or 30 methods, without the anticipations of the inventors being realised, but they had gained much experience of the utmost value for the relief of patients and the prolongation of their lives. He thought that if there were a committee to coördinate the work they would obtain more valuable information than by simply looking at one aspect brought out by one hospital. Professor G. A. Wright thought that it would be better to have a research centre in Manchester than to trust to the work done elsewhere. As regards the hospital, they wanted to assure people that cancer was not always hopeless if advice was taken in the early stages. Of course, with cancer, as with "consumption," delay is fatal, but there is the great difficulty that the patients are for a long time unaware of their danger. Professor Wright spoke also of the danger from "quacks." He knew of one scoundrel, living not far from them, he said, who let a woman with nothing more than a wart on the tongue go about with a bottle of "cancer lotion," and of course live in dread of cancer. "They had to get people to realise the folly of dealing with quacks." The cruelty of quacks and the speculative hopes that lead so many to trust in the divine inspiration of anyone who is called an irregular practitioner are mutually supporting.

*The Fight Against Tuberculosis.*

The question of the best way of dealing with tuberculosis among the poor becomes more and more pressing. Boards of guardians are in great difficulties, for in many unions the numbers to be dealt with are alarmingly great. The matter recently came under discussion at a special meeting of the Chorlton board. As always, the special difficulty was the late period at which most of the cases come under observation and treatment. In the Withington Hospital 300 or 400 cases are admitted every year, of whom not more than 12 or 15 are fit to go to sanatoriums. There is no power of detention, and many hopeful cases, driven by the need to work, leave prematurely. At present the board has 11 patients in sanatoriums at a cost of £1100 a year, and the Manchester corporation pays £2000 a year for 20 beds at the Delamere Sanatorium. These numbers, however, are but as a drop in the bucket, as the chairman said. Where the head of the family is ill with phthisis, his wife and children cannot be allowed to starve, so that it is easy to understand the enormous expense involved in even the most economical methods of dealing with this scourge. The medical officers of the union were present and agreed generally that when first seen the cases were, as a rule, too far gone for sanatorium treatment, but if it were known that it was available there would be many applications. Dr. J. S. Orchard, who had been for many years resident at Withington Hospital, was not very sanguine as to the permanent effect of sanatorium treatment, for though the patients were practically well while in the sanatorium, "after six months of hard work and insufficient food in unhealthy surroundings they relapsed." In the end it was decided to ask the Manchester board to join the Chorlton board in approaching the health department of the Manchester corporation and request it to provide sanatorium accommodation for consumptives. This is a formidable but a very desirable undertaking. It shows how severe the struggle must be if consumption is to be banished from our midst.

Dec. 7th.

## WALES.

(FROM OUR OWN CORRESPONDENT.)

*Housing in Wales.*

THE reports which have been issued in recent years, not only of the medical inspectors of the Local Government Board but also of the district medical officers of health, have revealed conditions of housing in various parts of Wales which can only be described as deplorable. In no part of the kingdom is there greater need for efficient administration of those Acts of Parliament which refer to the housing of the working-classes, but it is to be feared that the sanitary authorities whose duty it is to initiate reforms will not be stirred to activity unless the pressure of public opinion is brought to bear upon them. A first step towards the concentration of that opinion has been taken in the formation of a Welsh Housing Association for the purpose of investigating the facts relating to housing conditions in Wales and for bringing within reach of the people the means of reform upon the most modern lines.

*School Dentistry in Cardiff.*

Arrangements have been made with eight dentists in Cardiff to attend to the teeth of the children attending the public elementary schools upon the same terms upon which they attend members of the Provident Dispensary. The education committee will thus pay them 6*d*. for each tooth extraction and 2*s*. for each stopping.

*Colliery Surgeons in South Wales.*

Although for the most part the relations between the colliery surgeons and the workmen employed in the South Wales collieries are of a satisfactory character there are instances here and there where some change is desired either by the men or the surgeons. At a meeting of miners held in the Rhondda valleys on Nov. 29th it was stated that a ballot of the men had decided in favour of the establishment of medical committees, by whom the colliery surgeons should be appointed and under whose supervision they should be placed. Those who have watched the development of the colliery districts during the past 25 years cannot fail to have noticed the admirable manner in which Mr. W. Abraham, M P. (Mabon), has used his influence with the workmen when conflicts with the masters have been imminent, and it cannot be denied that disputes between the surgeons and the men would have been of much greater frequency had it not been for the restraining influence which he has been able to exercise at the proper moment.

*Damages against a Dairy Farmer.*

An action lasting nearly four days has been tried at the Liverpool Assizes in which the proprietor of a boys' school near Conway claimed damages against the executors of a dairy farmer on the ground that typhoid fever had been introduced into the school through the agency of the milk supplied from the farm. The farmer's housekeeper and her daughter had been attacked with the disease and he himself subsequently died from it. The outbreak at the school began early in April about a fortnight after the housekeeper had returned to the farm from the isolation hospital. Several of the boys were attacked and later the schoolmaster, his daughter, and wife were infected, the illness of the last terminating fatally. Cases occurred in other houses besides the school where milk was supplied from the same farm, altogether about 24 cases being reported. There was some conflict of evidence as to the cause of the school outbreak. Sir James Barr and Dr. Meredith Young maintaining that it was due to the milk-supply, while Mr. A. G. R. Foulerton, Dr. T. R. Glynn, and Dr. Nathan Raw contended that the milk was not responsible and that the primary cases became infected indirectly through the condition of the foreshore of the river Conway. In the course

of the evidence it transpired that the proprietor of the school had taken the precaution to obtain a certificate to the effect that the drainage of his house had been found after examination to be in a satisfactory condition. He had also secured a favourable report as to the water-supply of his own house and as to the sanitary condition of the dairy farm. When summing up Mr. Justice Bray stated that there was an implied warranty that the milk supplied to the school was reasonably fit for consumption. The jury gave a verdict in favour of the schoolmaster, and assessed the damages at £500.

Dec. 6th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

*An Edinburgh Cremation Society.*

Dr. W. G. Aitchison Robertson, who has been a consistent advocate of cremation in Scotland, on Dec. 3rd delivered a lecture in the Goold Hall, Edinburgh, in which he expounded the sentimental, sanitary, and economical advantages of disposing of the dead by cremation and the corresponding disadvantages attaching to earth burial. He was followed with attention and at the close of his address a resolution was passed unanimously to the effect that an Edinburgh Cremation Society be formed to promote the practice of cremation. A committee has been already appointed to adopt a constitution and elect officers for the society.

*High Death-rate in Glasgow.*

The five continuous days of dense fog which prevailed in Glasgow in the third week of November are apparently responsible for the great increase in the death-rate. For the week ending Nov. 13th the death-rate was 18·0, and for the next week, during which fog constantly prevailed, 24·9 per 1000. This latter rate is greatly in excess of the average, which is 17·5 for the fourth quarter of the year. The number of deaths of infants under one year rose from 106 to 149, of children under five years from 191 to 279, and of persons over 60 years from 118 to 150. As is to be expected, the largest increases occurred in deaths attributable to the various forms of lung disease, and the rate from these diseases rose from 4 to almost 8 per 1000. The number of deaths from all causes, which had been 283 in the first week, was 395 in the second. Deaths attributable to acute disease of the lungs, which had been 82 in the first week, were 134 in the second week; deaths from consumption increased from 16 to 31, and from measles, which most commonly proved fatal through lung complications, from 20 to 34.

*Railway Conveyance of Milk.*

The public health committee of the Glasgow corporation has been in touch with the various railway companies as to the question of allowing milk-churns and milk-butts to be sealed so as to prevent unauthorised persons at the stations or in the course of transit opening the lids of the churns or taking the cocks out of the milk-butts, thereby causing contamination. The subject was discussed before a meeting of the associated railway companies, but they declined to concur in the proposal. They were of opinion that the seals would be very liable to be broken in the ordinary course of transit, and, further, that under the conditions of the form of Milk Risk Note signed by the senders of milk traffic the officials of the companies had power to open any cans during transit in order to ascertain if the quantity of milk therein agreed with the quantity declared.

*Addition to the Western Infirmary, Glasgow.*

At the thirty-fifth annual meeting of qualified contributors to this infirmary held last week one particularly gratifying feature in the report submitted was the progress that is being made in bringing the hospital still more up to date, both as regards accommodation and appliances. A new pavilion to hold 90 beds is in course of construction. Also, through the generosity of a donor who wishes to remain anonymous, a sum of £5000 has been received for the erection and equipment of a clinical laboratory, which should prove a very desirable adjunct to the medical school, and also of great use in the diagnosis and treatment of disease. Also, it is worthy of note that the Provisional Order promoted by the directors of the Skin Hospital has received the Royal Assent, and the work carried on by that hospital for so many years is now being carried on in the dispensary of the Western Infirmary.

*Death of Dr. James Stevenson, Clydebank.*

One of the best known and most highly respected residents in Clydebank passed away last week in the person of Dr. James Stevenson. He had been ailing for some time but was still able to go about, and his death in the end occurred somewhat suddenly. Born in Dunfermline 58 years ago, he was at first apprenticed to a trade, but by his own energy and perseverance he entered the University of Glasgow, where he graduated M.B., C.M. It is some 30 years ago since he went to the district which is now Clydebank, just about the time when it began to be a great shipbuilding centre. As the place grew he acquired an extensive practice, which he worked almost to the end. He was medical officer for the burgh and for the central portion of the parish of Old Kilpatrick. He took an active part in public life. Elected to the school board, he was chairman for a term, and at the time of his death he was a county councillor for Dumbartonshire. He leaves a widow and family including two sons who are members of the medical profession.

*University of St. Andrews: 500th Anniversary.*

The general committee which has in hand the arrangements for a fittting celebration of the 500th anniversary of St. Andrews University held its first meeting on Nov. 27th within the hall of the United College. After a few opening remarks by the Principal, Professor Lawson, convener of the provisional committee, gave an account of its work. It was resolved that the President should be the Chancellor, Lord Balfour of Burleigh. Subcommittees of the general committee were also constituted. On the motion of Professor Herkless it was agreed that the celebrations should take place in September, 1911, having in view the fact that Bishop Wardlaw had recognised the existence of a University of St. Andrews in 1411. On the question of a permanent memorial of the celebration, it was suggested that this should take the form of a new students' union. It was resolved to refer this, as all proposals dealing with this question, to the convener's committee.

*Sidlaw Sanatorium: Financial Position.*

In connexion with the Sidlaw Sanatorium financial crisis a public meeting was held on Dec. 3rd in the Burgh Court Room, Dundee. Fully an hour's discussion took place, when all the facts were disclosed, and in the end the Lord Provost, who presided, undertook to lay before the town council a modified scheme of municipalisation, while a committee was appointed to make a systematic canvass for subscriptions to support the institution in the meantime.

*Infantile Mortality in Inverness and Elgin.*

The public health committee of the Inverness town council at a meeting on Nov. 29th discussed at length the Notification of Births Act. In the course of the discussion it was stated that Inverness was one of the few burghs in Scotland with a very high death-rate among infants. It was eventually agreed by 7 votes to 2 to recommend the council to adopt the Act. The Elgin town council met on the same day in order to discuss what might be done in order to lessen the high rate of infant mortality in the town. It was decided to appoint a third nurse for Elgin to advise mothers and assist in nursing their children.

Dec. 7th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*Health, Food, and Cookery.*

ONE of the most significant features of the hygienic advancement which has been secured for this country by the efforts of the Women's National Health Association was displayed to the public eye by the recent Irish Food and Cookery Exhibition at the Rotunda. The exhibition had been organised by the Hotel and Tourist Association of Ireland, and the ceremony of declaring it open to the public was carried out by the Countess of Aberdeen, who said that the selection of proper food and the right preparation of it had a very great effect upon the national health and character. The inevitable effects which must

result from a deficiency of proper food for the infant members of the community—of a want of proper, clean, healthy milk, or the defective qualities of that of the mother which necessarily resulted from insufficient nourishment—were also pointed out by the speaker, and also the fact that from that cause alone arose very much of the bad health and the bad temper with which they had to deal from time to time, while it was also productive of great collective loss to the nation. An exhibition of that kind, by drawing attention to the importance of food from every point of view, must help to secure the health of the nation by building up the health of the home. Considerable applause was elicited by Her Excellency's statement that: "Owing to the exertions of the Women's Health Association the children in various parts of the country were now always asking for stirabout." All medical readers will admit that no more appropriate sequel to the Tuberculosis Exhibition could be provided than a Cookery Exhibition. Bad air was treated at full length by the former; bad food will be thoroughly exposed by the latter; while bad drink is being deliberately and unsparingly dealt with by the leaders of the present temperance crusade. These are the true "grievances" of the home life of the Irish poor, and this fact makes the present position all the more auspicious.

*The Dublin Milk-supply.*

It is hopeful to see that our corporation has recently been waking up to the importance of the supply of pure milk in Dublin, seeing that the tenement room and the milk van are chiefly responsible for the preparation of the soil most suitable for the germs of crime and insanity, and when moistened by stimulating beverages and continuously tended by bad company the yield of its harvest may be calculated on with confidence. On one day last week in one of the Dublin police courts a dairyman was fined £2 for selling margarine, of which the label was not clearly visible to the purchaser; a dairy-keeper was fined £5 for the sale of milk adulterated with 16 per cent. of added water; and another £3 for the sale of milk containing 10 per cent. of added water. Such records, which are repeating themselves every week in the Irish metropolis, display a condition of mercantile morality which can only be dealt with effectively by the most stringent measures, and it is encouraging to find the Recorder has thrown all his influence into the scale in the weighing of this question—a step which has also been followed by our police-court magistrates.

*Rathmines Urban Council.*

At the meeting of the urban district council of Rathmines which was held last week the report of the Local Government Board auditor was read, with the enclosed certified abstracts of the accounts of the council for the year ending March 31st, 1909. The general receipts amounted to £56,334 18*s.* 2*d.*, and the poor rate receipts to £29,663 1*s.*, making a total of revenue receipts of £85,997 19*s.* 2*d.* The sum expended on private works had amounted to £1259 16*s.* 2*d.*, and the surplus, which represented the accumulation of some years, having been added to the general fund, a balance of £918 0*s.* 10*d.* was left for the carrying out of other works under the same headings. The medical officer's report for the five weeks ending Oct. 30th stated that the total birth-rate was 15·9 per 1000, while the total death-rate had been 10·9. During the same period the total annual death-rate in 33 of the largest English towns was 12·3 (that of London being 11·8); in eight of the largest Scotch towns, 12·8; in 23 of the largest towns of Ireland, 15·5—in Dublin, 18·1; Clontarf and Howth (No. 1 district), 15·7; Donnybrook, 12·1; Blackrock, 20·3; and Kingstown, 13·0.

*The Public Health of Belfast.*

At the monthly meeting of the corporation of the city of Belfast held on Dec. 1st it was reported that the Tuberculosis (Ireland) Prevention Act came into operation on Nov. 1st, and that during the three weeks following 102 cases had been reported. The death-rate from all causes for the four weeks ended Nov. 20th was 16·7, while it was 5·9 from chest diseases and 1·1 from zymotic affections. The number of cases of infectious diseases notified is greater than in the preceding month, but less than in the corresponding period of the previous year. Great objection was expressed at the action of the Local Government Board in refusing to give the corporation the necessary powers to supervise outside dairies for the reason that the Act was a comparatively new one, and that outside authorities should, they said, get a chance of seeing to the condition of things. Owing to this action of the Local Government Board in reference to the largest city in Ireland (where two-thirds of the milk-supply comes from outside sources), it has been decided by the Belfast local authorities to instruct their medical officer of health to prepare for the information of the public health committee a list of the dairies outside the city from which milk is supplied for consumption inside the city, distinguishing those who permit an inspection of their premises and those who do not. Permission was given at the meeting of the Belfast city council on Dec. 1st to bring in a scheme for clearing away the insanitary areas of the city which could not be dealt with in any other way, and it appears that in all 1159 houses will be affected and about 3000 to 4000 persons will be unhoused. It was also intended to widen streets which were at present narrow, to open out streets which were not thoroughfares, to allocate portions of grounds for open spaces, and to utilise some as playgrounds for schools. The scheme is valued to cost about £90,000, and in addition £20,000 for model buildings to replace those removed. The scheme will not go through until there is a sworn inquiry into its provisions by the Local Government Board. A special meeting of the council is to be called shortly to consider the whole matter.

Dec. 7th.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*The Alleged Immunity of Arabs to Enteric Fever.*

IT is a generally accepted view that Arabs possess a considerable degree of immunity to typhoid fever, and that when persons who have lived in France proceed to Algeria they are attacked by the disease about 100 times more readily than the Arab natives. M. Moty, M. Toussaint, and M. Billet called attention to this subject at a recent meeting of the French Society of Military Medicine when M. Billet did not accept the above-mentioned view. He said that this immunity was merely relative, and he quoted several cases in support of his opinion. He remarked that conclusive evidence in this respect was supplied by an epidemic which broke out at Sfax in 1899, for among 32 cases of typhoid fever occurring in the garrison there were 22 native patients—i.e., a proportion of 68 per cent. The infection was brought into the garrison by the natives, and the 11 first patients were native tirailleurs who were enrolled as volunteers and had been in the army only a few days. It was therefore unquestionable that Arabs might be attacked by typhoid fever in certain circumstances which were as yet rather obscure. The cases were generally severe and their real nature was often misunderstood; the seizures might be sudden and violent and were then liable to be mistaken for pernicious forms of malaria.

*Adulteration and Fraudulent Misdescription of Food and Beverages.*

In his report on agricultural finance M. Noulens has dealt at considerable length with the prevention of various kinds of fraud in connexion with the preparation of food and beverages. In one year the officials employed in this work have been increased from 931 to 1068. During the year 1908 there were 67,726 samples examined, of which 14·4 per cent. were unsatisfactory. Samples of all kinds of beverages and food products were taken indiscriminately and usually at random. At the commencement of this preventive work it was found that oil, milk, vinegar, and wine were the articles most liable to be tampered with. The average for the year 1907, which showed 20 per cent. of unsatisfactory samples, was reduced in 1908 to 14·4 per cent. and in the beginning of 1909 to 14·1 per cent. Frauds in connexion with mineral waters have become exceptionally prevalent of late years, both in the actual factories which supply retailers and also in a great many restaurants. Samples of mineral water were not collected for analysis until the end of 1907, when it was found that a restaurant was selling common water in bottles labelled Evian-Cachat. In 1908 many restaurant keepers were detected selling ordinary water as the produce of well-known mineral springs (Evian, Vittel, Baudoit). Visits were paid to wholesale dealers, and four important seizures were made on the premises of persons who manufactured spurious mineral waters chiefly by the use of bicarbonate of sodium.

*Bacteria on Fruit.*

M. Sartory and M. Fillassier have been making bacteriological examination of fruit exposed for sale in shops open to the street and also in costermongers' barrows and baskets. The fruit consisted of grapes, strawberries, red currants, and cherries. In giving an account of their results at a meeting of the Biological Society they said that the sterilised water in which the fruit received its first washing was afterwards found to contain staphylococcus, streptococcus, bacillus termo, bacillus subtilis, and micrococcus candicans, the number of organisms varying according to the condition of the fruit as regards cleanliness from 68,000 to 3,200,000 per cubic centimetre. On the second washing these numbers ranged from 7000 to 120,000, and on the third washing they ranged from 3000 to 27,000.

*Prophylaxis of Typhoid Fever.*

At a meeting of the Academy of Medicine held on Nov. 16th, M. Delorme continued a discussion in the previous portion of which M. Vincent, professor at Val de Grâce, had mentioned a number of ways in which typhoid fever might be propagated. M. Delorme said that in his opinion the quality of the drinking water was the point on which sanitarians ought to concentrate their attention. It was by providing an abundant supply of good water that municipalities which were desirous of improving the health of their towns put an end to epidemics of typhoid fever. Much still remained to be done in this respect, especially in certain districts of the east and south of France. Even in garrison towns where the barracks had a good water-supply provided at great expense the town's supply was unsatisfactory, and soldiers who drank it during their visits to places where liquor was sold afterwards suffered from typhoid fever. It would be remembered that an outcry was raised not long ago because in a garrison town where typhoid fever was prevalent the military authorities wished to forbid soldiers resorting to refreshment houses the water-supply of which was derived from notoriously polluted wells. He was not without fear lest the establishment of laboratories and systematic inspection and the publication of pamphlets would tend to give municipalities an excuse for not proceeding with the only true prophylactic measure, the providing of an abundant supply of good water with supervision of the sources. An army medical officer in a garrison town was in some respects more favourably placed than a laboratory specialist, because he witnessed the earliest stage of an epidemic, he could investigate the causes which led to it, he was acquainted with the local conditions, and he could suggest measures for preventing its extension and its possible recurrence in the future.

*Anti-tuberculous Vaccination of Cattle.*

After investigations extending over many years Professor Arloing, director of the Veterinary School of Lyons, has discovered, he says, a method of vaccination for the protection of cattle from tuberculosis. The vaccines which he employs are derived from definite kinds of bovine bacilli; they are obtained by a special process of culture, and are capable of unlimited transmission. These modified bacilli cause no appreciable lesions, and the treatment cannot injure the cattle. The vaccination may be either intravenous, subcutaneous, or by way of the alimentary canal. The intravenous method has given the best results—namely, 75 per cent. of successful cases, and introduction by way of the alimentary canal came next with 50 per cent. of successful cases. Professor Arloing says that improvements in the details of the method may be expected, but the results already attained warrant its employment, together with ordinary prophylactic measures, for the prevention of bovine tuberculosis. At a meeting of the Academy of Sciences held on Nov. 29th Professor Chauveau said that he had been able to corroborate the conclusions at which Professor Arloing had arrived.

Dec. 7th.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

*The late Duke Carl Theodor of Bavaria.*

H.R.H. Duke Carl Theodor of Bavaria, M.D., died at his country seat at Kreuth in Upper Bavaria on Nov. 29th. The life of the late duke was very unlike that of the average members of reigning families in Germany or elsewhere. As a youth he entered on a military career like the majority of other princes, but exchanged it for more congenial pursuits—namely, the study first of philosophy and afterwards of natural science and of medicine. In 1872, on the occasion of the fourth centenary of the University of Munich the honorary degree of M.D. was conferred on him. He now became greatly interested in diseases of the eyes and worked at this specialty under the late Professor Rothmund of Munich and Professor Arlt of Vienna. In 1880, having passed the State examination and thereby become qualified as a medical man, he not only commenced practice in Munich as an ophthalmic surgeon, but also established private clinics in Munich and Tegernsee, where he used to reside during the summer. A dexterous operator, he very soon acquired, both in his own country and abroad, such a reputation for surgical skill that his practice in diseases of the eye was one of the largest in Germany. His patients for the most part belonged to the poorer classes as he never charged fees, but he was also consulted by well-to-do people and especially by the royal personages who were his relatives and friends. It may be remembered that when the present Emperor of Germany suffered a few years ago from an injury to one of his eyes caused by an accident he consulted the late duke, who came from his residence at Munich to the port of Kiel where the accident had happened. The number of the operations performed by him especially for cataract was enormous; in fact, he was in this respect surpassed by only a very few surgeons in the same department of practice. Notwithstanding his exalted rank and social position he identified himself with the interests of the rank and file of the profession, loyally coöperating in whatever steps had to be taken for the assertion of their privileges and for the reform of abuses connected with the existing legislation on sick-clubs. According to the *Voss-Zeitung*, he was a member of the Munich Free Choice Society and willingly acquiesced in the control of club practice exercised by the committee of this society. He was also one of the early members of the great medical union, known as the Leipziger Verband, to which allusion has been repeatedly made in these columns. The late duke was the author of numerous works in several branches of medicine. His first contribution was published as early as 1871 in the *Zeitschrift für Biologie* and dealt with the influence of the atmosphere on the metabolism of respiration; in 1877 he wrote an account of experiments on the accumulation of leucocytes in the cortex of the brain, and in the following year he published microscopical researches in certain diseases of the spine. His first work in diseases of the eye was devoted to the anatomy and pathology of the vitreous humour; in 1882 he wrote an essay on myopia from an anatomical point of view; and in 1887 one on the pathological condition of the eyes in diseases of the kidney. For the annual reports of the Munich municipal hospital he contributed an essay on growths of the orbit, and for the *Festschrift* on the occasion of the seventieth birthday of the late Professor Helmholtz, he wrote a description of a case of callosity of the superior eyelid. Duke Carl Theodor was born in 1839, his father being Duke Maximilian of Bavaria. He was twice married, his first wife being the Princess Sophia of Saxony who died in 1867, and his second the Princess Maria Josefa of Portugal, who took an active part as an assistant in her husband's clinical work. Of his sisters two came by their death in very tragic circumstances—namely, the Empress Elizabeth of Austria, who was murdered at Geneva by an Italian anarchist, and the Duchess of Alençon, who perished, together with so many other French notabilities, at the great fire at the Bazar de Charité in Paris. The death of Duke Carl Theodor has caused great sorrow everywhere, especially among the dwellers in the Bavarian Alps, where he had his favourite residence. At Possenhofen he had a model farm, and he was much interested in the retention of their picturesque national costume by the Bavarian peasants, giving prizes to families who conformed to his ideals in this respect. It may here be mentioned that another member of the Bavarian royal family, Prince Louis Ferdinand, a cousin of the late duke, is a qualified medical man too, but does not practise.

*Idiocy and Syphilis.*

Dr. Lippmann, an assistant to Professor Wassermann, has published in the Munich *Medicinische Wochenschrift* an account of researches on the connexion between idiocy and syphilis. He mentioned that by the Wassermann reaction

syphilis has recently been ascertained to be one of the causes of progressive paralysis, and the existence of a similar connexion between idiocy and syphilis has been suggested by various clinicians, the estimates varying from 11 to 23 per cent. Dr. Lippmann has applied the Wassermann reaction to idiots in two asylums—the provincial asylum of Uchtspringe in Westphalia for children of the rural population and the asylum of Dalldorf, which belongs to the city of Berlin, and therefore has for its inmates children coming from an urban population. As a control he first used the Wassermann reaction for a series of epileptic children, and found it to be positive only in a few instances in which the patients also showed other symptoms of syphilis. Of 78 idiots in the Uchtspringe asylum the reaction was positive in seven (i.e., 9 per cent.), but among the idiots in the Dalldorf asylum it was positive in 13·2 per cent. By examination of the patients and by the anamnesis Dr. Lippmann, however, found syphilitic symptoms in about 40 per cent. of the idiots, so that there is probably some connexion between syphilis and idiocy. He alluded to the researches of Dr. Baisch, who found in lying-in hospitals that in syphilitic women the disease is latent in about 75 per cent. of the cases, the Wassermann reaction being positive and spirochætæ being present in the placenta, but the woman not showing manifest symptoms of the disease. He therefore recommended the use of serum diagnosis in lying-in hospitals for the purpose of disclosing latent syphilis. The children born of mothers who gave a positive reaction should, if necessary, be subjected to antisyphilitic treatment. He further suggests that this method of diagnosis might be advantageously given an extended trial in cases of idiocy.

Dec. 6th.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

### *Plague.*

FOR the week ending Oct. 30th plague seizures and deaths throughout India numbered 4287 and 3456 respectively. The mortality in the different provinces was as follows: Bombay Presidency, 946: Madras Presidency, 94; Bengal, 53; the United Provinces, 634; the Punjab, 476; Burma, 14; the Central Provinces, 837; Mysore State, 166; Central India, 212. The figures for Rajputana have not been received. Nagpur city reported 561 deaths.

### *Malarial Fevers and the People.*

The interesting and suggestive paper by Sir Herbert Risley in which he summed up the work and results of the Malaria Conference at Simla is especially worthy of attention, because it was written with the object of inviting popular coöperation in the prevention of malaria. He truly says that to combat effectively this ancient, widespread, and destructive scourge is a task which cannot be accomplished by any official machinery that can be devised or even contemplated. The cost of the huge official machinery which would be required would be prohibitive. Secondly, every rupee spent on the official staffs would be so much less available for the actual measures needed to cope with the disease. And, finally, the various operations which must be carried out to remove conditions productive of malaria would possibly and even probably rouse hostility unless they were so explained as to convince the people that they were intended for the benefit of the community. We may go further and affirm that these processes will never be thoroughly worked until they become as much a portion of the routine of village life as the healthful daily bath, which is properly considered one of the most wonderful institutions in India. The coöperation of the people is therefore absolutely necessary. Can it be secured?

### *The Proposed Research Institute for Maymyo.*

The Secretary of State has declined to sanction the scheme for establishing a research institute in Maymyo, of which the Pasteur Institute was to form a part. The ground for his refusal is that in the present state of provincial finances it is inadvisable to embark on an ambitious undertaking of this description, and with this cautious policy few will be disposed to cavil, seeing that the estimated expenditure on building alone was close on 6 lakhs of rupees.

### *Health of the United Provinces.*

The sanitary report of the United Provinces for 1908 deals largely with "the deplorable epidemic of malarial fever which swept through the greater portion of the provinces between August and September." The mortality was the highest ever recorded: about one-twenty-fifth of the whole population perished from "fever," while the deaths from all causes amounted to 2,514,767, or one-twentieth of the population. At the same time the birth-rate fell from 41·18 to 37·46 per 1000. Apart from malaria, the year, despite famine conditions, was by no means abnormally unhealthy. It is a noticeable feature of the malarial epidemic that the districts where famine was worst were not, as a rule, severely attacked by malaria, but where it appeared it attacked all classes of the population alike—rich and poor, Europeans and Indians. In the four months from September to December the fever death-rate was 23·92 per 1000, as compared with an average of 10·71. Quinine was distributed in far larger quantities than in any previous year, much of it being given free of cost, and excellent results are reported to have been achieved; but there are, of course, great difficulties in the way of placing sufficient quantities of quinine to check an epidemic within reach of the mass of the people. The question of improving the system of distribution of quinine is now under consideration, and a special inquiry is being conducted by Major J. C. Robertson, I.M.S. There was excessive mortality among infants owing to malaria, famine conditions, small-pox, and measles. As with the general population the infant mortality was the highest ever recorded, and reached the appalling figure of 345·1 per 1000, so that one infant perished out of every three born. This question of infant mortality has been receiving serious attention, and an inquiry into its causes is being commenced at Cawnpore by a lady doctor assisted by two trained midwives. Despite unfavourable financial conditions the year was one of much activity in sanitary matters. There was a sanitary conference in September, and the recommendations made at it, many of which have been approved and are being carried into effect, will, it is hoped, improve the sanitary conditions of towns and villages. The municipalities, having been relieved of police charges, are now able to devote over 5 lakhs per annum, formerly spent on the police, to sanitary and other improvements, and these additional resources should enable many necessary works to be carried out.

### *A New Hospital for Meerut.*

The Lieutenant-Governor of the United Provinces (Sir John Hewett) laid the foundation-stone of a new general hospital at Meerut on Oct. 29th. At a durbar held so recently as February last his honour mentioned that the existing General Hospital at Meerut has inadequate accommodation and indifferent equipment, and that the female hospital, although its buildings are modern, stands on a most unsuitable site. The Lieutenant-Governor complimented Meerut residents upon the public spirit and alacrity with which they had taken action on his remarks, for in so short a time the large sum of Rs.77,000 has been collected in subscriptions towards the cost of the new buildings. In addition to these voluntary contributions, Rs.30,000 have been provided by local bodies and Rs.63,000 will be realised by the sale of the sites of the old buildings, a sum of Rs 1,70,000 having, therefore, been secured by local effort towards the total of Rs.2,15,000 required for the buildings. As a substantial proof of the sincerity of his compliments and on the principle that the Government should readily help those who help themselves, Sir John Hewett promised the Rs.45,000 balance of the cost, thus redeeming a promise he made in March last to the people of Meerut. He congratulated those responsible on the excellence of the proposed buildings, and hoped that their equipment would be made sufficient and the wards bright and comfortable. With characteristic thoughtfulness he suggested that the hospital should be named the "Ludovic Porter" Hospital, to commemorate the interest which the Collector of Meerut has taken in the project, as well as in all other schemes for the benefit of the city and district.

Nov. 10th.

# Obituary.

## ROBERT MARCUS GUNN, M.A., M.B., C.M. EDIN., F.R.C.S. ENG.,

SENIOR SURGEON, ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS, ETC.

Robert Marcus Gunn, whose loss we have to deplore, came of an old Scandinavian stock settled for many generations in the north and north-east of Scotland. He was born at Culgower in Sutherlandshire in 1850, the youngest of a family of four, consisting of two sons and two daughters, none of whom survive him. Educated for a year at his native village school, and afterwards at a larger school in Golspie, he went at the age of 14 to Edinburgh, where later he graduated with distinction, taking the M.A. in 1871 and the M.B. and C.M. in 1873. He was contemporary there with Robert Louis Stevenson, whom he knew slightly. His teachers included Syme and Lister, and on the ophthalmic side Walker and Argyll Robertson.

In 1873, having an introduction to Mr. Couper, he began to attend at the Moorfields Eye Hospital, and in the early months of 1874 worked at the comparative anatomy of the eye under Professor Schäfer at University College, London. During the summer vacation of this year, and for some time in the following year, he was in residence at the Perth District Asylum, Murthly, work which he undertook with the object of examining the fundi oculorum of a large number of lunatics. He was attracted to the subject by the recently published work of Professor Clifford Allbutt, and found the duties congenial. From December, 1874, to June, 1875, he studied in Vienna, chiefly under Jaeger, whom he considered greatly superior to Arlt or Stellwag as a teacher. On his return to London he resumed work with Mr. Couper at Moorfields, where he was appointed junior house surgeon in August, 1876. He became senior house surgeon in December of the same year, retaining this post until November, 1879. His work as a resident medical officer coincided with noteworthy improvements in various directions in the hospital, such as reform of the nursing, a higher standard of note-taking, and better results in the operations for cataract. His influence made itself felt in these matters, and the last-mentioned is perhaps to be attributed in no small degree to his early adherence to Listerian principles. A remark of Syme, in commenting upon one of Lister's cases at Edinburgh, "We are told of pus, we fear pus, we expect pus—but we see no pus," made a great impression upon him as a student, and in Mr. Couper he found a chief who was enthusiastically sympathetic to the new principles.

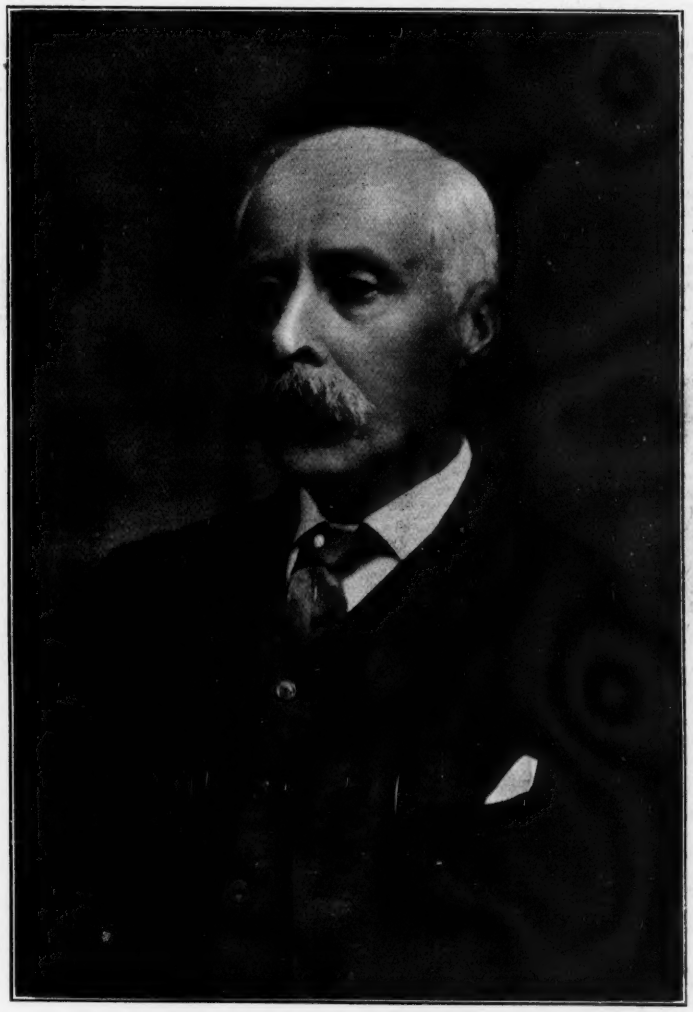
In December, 1879, he made a voyage to Australia with the special object of collecting the eyes of marsupials and monotremata for microscopic investigation. His work on the comparative anatomy of the eye, which early attracted the attention of Sir William Bowman, appeared in part in the *Journal of Anatomy and Physiology* ("Minute Anatomy of the Retina," 1877, "The Eye of Ornithorrhynchus," 1884), and elsewhere ("The Embryology of the Retina of Teleosteans," 1888). He assisted in examining the zoological material collected in the *Challenger* expedition. Much of this work was embodied in his Arris and Gale lectures before the Royal College of Surgeons of England, which were unfortunately not republished. Taking the F.R.C.S. Eng. in 1882, Mr. Gunn wase lected assistant surgeon to the Moorfields Eye Hospital in August, 1883, on the resignation of Mr. Wordsworth, becoming full surgeon in 1888. He was also appointed ophthalmic surgeon to the National Hospital for the Paralysed and Epileptic, Queen-square, in 1886, and to the Hospital for Sick Children, Great Ormond-street, at about this time. At a later period he held the post of assistant ophthalmic surgeon to University College Hospital. In 1906 he was invited to deliver an address before the American Academy of Ophthalmology and Oto-Laryngology. He chose "Certain Affections of the Optic Nerve" as his subject, putting forward the view that the initial œdema of the disc in cases of cerebral tumour is due to pressure on the small veins of the pial sheath by fluid in the intervaginal space. His death occurred on Nov. 29th, after a painful and distressing illness, which commenced nearly a year ago. He was an early sufferer from influenza and had several attacks; it is probable that his health was seriously undermined by this complaint. At the time of his illness he was senior surgeon to the Moorfields Hospital, ophthalmic surgeon to the National Hospital for the Paralysed and Epileptic, Queen-square, president of the Ophthalmic Society of the United Kingdom, and a visitor for the King's Hospital Fund. Mr. Gunn leaves a widow and two daughters to mourn their loss.

If the attempt is made to form some appreciation of Mr. Gunn's work for the advancement of ophthalmology a review of his life, such as has been set forth here, shows how early he was attracted to the retina, its anatomy, embryology, and functions. His interest in ophthalmoscopy and in the neurological side of ophthalmology never faltered, but grew stronger as years went on. He was *facile princeps* in the use of the ophthalmoscope; his descriptions and interpretations of minute changes in the fundus oculi were accepted as the *ipse dixit* of a master, even by his colleagues at a hospital where, it has been said, ophthalmoscopic examination has gained the position of a fine art. Probably his best known and most quoted contribution is that relating to the ophthalmoscopic evidence of vascular degeneration, the importance of which, not only to ophthalmic science but also to medicine in general, is universally acknowledged. He was among the first, if not actually the first, to realise the gravity of the prognosis as regards life in cases of albuminuric retinitis. In 1886, two years before the publication of Miley's paper on the subject, he wrote: "In my experience it is most exceptional to see an old case of albuminuric retinitis; this latter affection seems to occur at a late stage of the general disease, so that death supervenes before the retinal changes have existed very long." As an authority on the ophthalmoscopic signs of nervous diseases his opinion was undisputed. His enormous experience at Queen-square, utilised to the full as it was by the extreme care and accuracy of his observations, rendered his position in this branch unique, and it will be long before his valuable services to his neurological colleagues can be adequately replaced. His interests, however, were by no means confined to these somewhat narrow channels. He was one of the first to insist upon the value of studying minute changes in the cornea and iris with the strongest available simple microscope, and the lens used by him served as a model for the corneal loupes now in common use. When in Vienna he was impressed by the systematic teaching there, and soon after his appointment to the Moorfields staff he was the means of initiating those courses of study which have led to the establishing of one of the foremost schools of ophthalmology in the world. Nor were his interests confined to ophthalmology. From boyhood he was devoted to outdoor pursuits, especially shooting, botany, marine zoology, and geology. For many years he collected fossils, chiefly fishes and plants of the Jurassic and Old Red Sandstone systems from Scotland to Dorsetshire. It is satisfactory to know that a large number of his most valuable specimens have recently been acquired by the British Museum.

Mr. Edward Nettleship, to whom we are indebted for much of the information contained in this notice, writes as follows: "Marcus Gunn's character might be described as little removed from that of the perfect knight—courageous and pure in mind and body, modest, but clear and strong in his convictions, sweet of temper, ready always to see the better side, scrupulous in giving credit where credit was due, but sensitive and quick to resent without respect of persons whatever he judged unworthy in motive or act. He was a man of considerable intellectual gifts and brain power, and an exceedingly keen and accurate observer; his mental grasp was strong, his judgment careful and well balanced; a certain matter-of-fact simplicity was set off by a ready sense of humour. His influence depended largely on the conviction that he was true and loyal to the core and never satisfied with slipshod methods or imperfect knowledge. Himself singularly guileless, he was a good judge of character and motives in others."

Professor Seward of Cambridge writes: "I have never met a more whole-hearted student of nature than Marcus Gunn. During the last 30 years he had spent most of his summer holidays in collecting fossils at Culgower and other places on the coast of his native country, with the result that data are now available of the greatest geological and botanical importance. Marcus Gunn was no mere collector: he regarded nature with the keen scrutiny of a well-trained man of science. The smallest fragment was carefully preserved, and no effort was spared to obtain every available

piece of evidence. His aim was to accumulate material which could be used in the interpretation of the records of the rocks, if not by himself by others with more opportunity for palæontological research. His energies were by no means confined to one locality: the collection includes a considerable number of fossil animals; among these may be mentioned a new species of fish which Dr. Traquair named after the discoverer. It is, however, of the plants that I am better able to speak. Thanks to his untiring devotion, it is possible to reconstruct from the fragmentary records the vegetation which flourished in the Upper Jurassic period in the North-West of Europe. Short as my acquaintance with Marcus Gunn has been, the impression which he made is that of a friend of long standing, whose loveable personality remains as an ennobling recollection. In him were combined rare modesty and high intellectual attainments. The words of one of George Meredith's characters, 'Men of science ..... are always the humanest,' find a striking exemplification in Gunn's life. The courage and patience with which he faced the inevitable are the expression of a true nobility of character and a precious legacy to those who mourn his loss."



ROBERT MARCUS GUNN, M.A., M.B., C.M. EDIN., F.R.C.S. ENG.
*(Photograph by Messrs. Elliott and Fry.)*

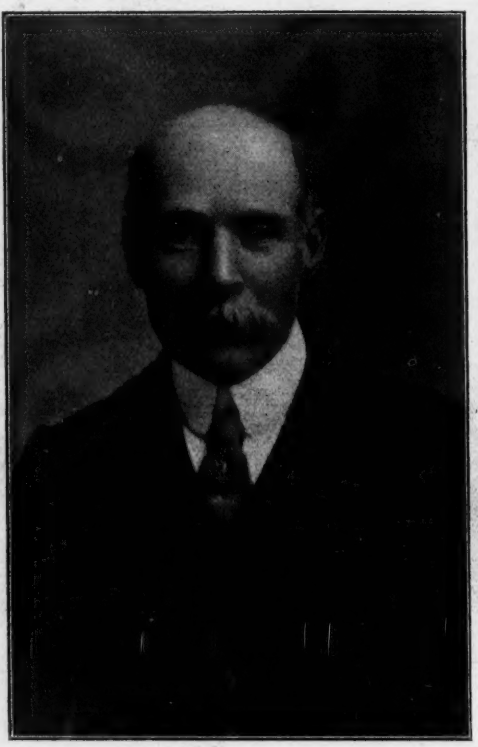
Mr. Percy C. Bardsley writes: "It has been my privilege to work week by week for the last 16 years under the late Mr. Marcus Gunn at Moorfields. His loss to ophthalmology will be recognised all over the ophthalmic world, but it is to express a still greater loss that I write. During these 16 years a vast number of surgeons from Great Britain and Ireland, from our colonies, and from America have come to Moorfields to study ophthalmology under Mr. Gunn. I believe that every one of these men will feel, as he reads your obituary notice, that he has suffered a great personal loss. For Mr. Gunn was a friend to all who worked under him. We look back and remember his unfailing urbanity as a teacher; the most junior student could ask him the most elementary question and be sure that he would not be rebuffed, while the older student would receive a lengthy explanation of a difficult case, as lucid as it was complete. He was always ready to give the best out of his vast clinical experience to those who sought for knowledge. Students have remarked to me over and over again, 'I think Gunn is the most perfect gentleman I have ever met.' His kindness to his hospital patients was as great as that to his students. His death has created a void in many of our hearts that will never be filled again in this life. Descended from an old Viking family and the last of his name, he was to us the model of a calmly judicious English gentleman."

The Rev. R. C. Gillie writes from Eastbourne: "Perhaps the prevailing impression made on those who knew him best was that of *fineness*, using the word in all its senses. In manner he was sensitively courteous in a very simple and understanding way, with a touch of Highland distinction blending oddly with his unassuming carriage. In his thinking he was singularly alert and transparently sincere. Whatever he knew, he knew with perfect clearness, so that a mere layman could delight in his scientific explanations. There was never the slightest concealment of the limits of his knowledge. One felt instinctively that his was a mind from which the last veil of unreality had been lifted and the last trace of evasion removed. Always considerate, even tender to the feelings of others, he was only wrathful with the charlatan, with what seemed to him either trickery or pretentiousness in politics or science. For such he had no mercy. Speaking of his mental attitude, it is impossible not to touch on his character, for his life was in a marked degree a unity. There was no closed compartment in it. In all his professional and scientific work, his remarkable purity of thought and feeling were as present as in his family and social relations. His patients felt instinctively that they were dealing with a man wholly trustworthy, who was incapable of deception. Trained in the Presbyterian Church, he retained to the end a deep conviction of the reality of the Father of Spirits. His faith had small use for formulas and the ordinary exercises of religion scarcely appealed to him, but humility and reverence were the unmistakeable accompaniments of all his thoughts of the unseen. He rarely broke through the reserve which lay behind the friendly and accessible demeanour. When he did, it was to reveal unconsciously the same clear thinking and lowly minded truthfulness so characteristic of all his life, joined to a wholly beautiful childlikeness. His was the blessing of the pure in heart."

## CHARLES ROBERT BELL KEETLEY, F.R.C.S. ENG., L.R.C.P. LOND.,

SENIOR SURGEON TO THE WEST LONDON HOSPITAL, ETC.

BY the death of Mr. Charles Robert Bell Keetley our profession has lost a skilful and eminent surgeon, whose life was a good example to all of us of honourable hard work and of devotion to hospital practice. He was the son of Mr. Robert Keetley, a ship-builder, of Grimsby, and was born at Grimsby on Sept. 13th, 1848. He received his medical education at the Hull Infirmary and at St. Bartholomew's Hospital. From the first an able and industrious student, he was awarded a gold medal in anatomy at the University of London. He qualified in 1873, and in 1875 was house surgeon at Queen's Hospital, Birmingham. In 1876 he obtained the Fellowship of the Royal College of Surgeons of England and for some years was assistant demonstrator of anatomy at St. Bartholomew's Hospital. But the true beginning of his surgical career came when he was appointed assistant surgeon to the West London Hospital. It is not too much to say that no hospital ever had a more zealous and faithful servant. From the day he first went there to the time of his last illness he gave his mind and his strength, often with a sort of extravagance, to its advancement and welfare. During his 30 years of service the West London Hospital grew from a suburban venture to a great general hospital for a million people, to which is affiliated a great post-graduate school. Keetley's name will ever be associated with this development of the place that he loved. He worked incessantly for it, and was often over-worked. On committees, at board meetings, on his operation days he would not leave till the very last thing of all had been done. He disliked having any of his work done for him. Even when his health, a few months ago, began to fail, he still would not take care of himself or hand over a part of his duties to a younger colleague. It is, for example, but a few weeks since he was down at Hammersmith all night undertaking three emergency operations, and there is little doubt that he might have lived longer if he could have been persuaded to allow himself more rest.



CHARLES R. B. KEETLEY, F.R.C.S.

In his treatment of his hospital patients he gave deliberate and prolonged attention to each case, and, further, was always putting his hand in his pocket for their needs. It will never be known how much money went that way in small sums, but there is not a house-surgeon who has ever served under Keetley who cannot recall his ready sympathy with the material needs of those who came beneath his professional eye. He was far more careful of other people's wants than of his own; and his high place in our profession would have stood even higher if he had been more business-like in his private practice. Often his great experience in operative surgery and his wise judgment in consultation were rated below their value by some colleague whom he had kept waiting, while it was not unknown for a patient to guess rightly that Keetley would soon forget whether he had, or had not, been paid for his attendance. It was with him, in this regard, as it was with John Hunter: both men alike were thoroughly methodical in the actual practice of surgery, at the bedside or in the operating theatre, but were inclined to be neglectful of their own advantage and of the well-earned payment of their work. It would be easy to trace the further likeness between them, for they were men of the self-same temperament, of singular tenacity of purpose and force of will, able to go forward over all kinds of obstacles, and in the end to be successful. Each of them, also, was emotional: readily moved either to anger, or to pity, or to generosity. "All of us, who were Keetley's friends," writes a colleague on the staff of the West London Hospital, "remember that he was quick to take offence, and to show that he was offended, and then, in a moment, he would be no less quick to say something kind and friendly, or even to apologise, in the most delightful way, to a man 20 years his junior. It was not difficult, now and again, to have the sense of a grievance against him; but it was impossible to abide in that most unprofitable of all feelings; the whole thing ended off hand in a better understanding. We found always under the passing vehemence of his manner the steady goodwill of a true friend. He was no more able than Hunter to smile and edge his way through life. What he wanted he fought for, with plain speaking, without hedging or trimming. And what he wanted, at the West London Hospital, was always the good of the hospital." Two of its institutions have become inseparable from his memory. One is the West London Medico-Chirurgical Society; he was its founder and its first president; and he received a great part of the happiness of his life from its rapid increase and from the crowded attendance at its meetings. The other is the Ladies' Association. Of this he may truly also be called the founder; and it would be hard to say too much about the admirable, wise, and valuable work which that association has done for the West London poor. These two institutions are of his making, and he lived to see his reward in their great and extending success. The post-graduate school, also, owes much to the loyal support that he gave to Mr. Bidwell in all the hard work of establishing and extending the school to its present membership.

Keetley made a real name for himself both by his practical work in surgery and by his literary work. Many of the profession are familiar with what he did in orthopædic surgery; but in all operations he was no less experienced, independent, and ingenious. In the later years of his practice he was especially interested in the operation of appendicostomy, and took a chief part in establishing it in this country. Among his writings, the chief are his book on "Orthopædic Surgery," his very useful "Index of Surgery," which is already in its fourth edition, and his "Student's Guide to the Medical Profession." He was also one of the editors of the first 15 volumes of the "Annals of Surgery." He published many papers of very real value on surgical subjects, his Harveian lecture on Plastic Surgery and his Cavendish lecture on the Conservative Surgery of the Appendix Vermiformis being among the best known of his writings. He was a frequent contributor to THE LANCET.

With his great love of friendship and his ready sympathy he enjoyed all such social pleasure as he could make time for. That fullest enjoyment of society which he deserved was hindered by his deafness. He bore that trouble with splendid patience, and could even jest over it. He was a good after-dinner speaker and an admirable artist. Indeed, many of his rough pen-and-ink sketches deserve to be published, for they are full of the very best kind of humour, while the

very little time that he ever gave to more ambitious painting served to show that he could have excelled here had he chosen. He was an honoured member of the Savage Club, and was an original member, and a President, of the Lincolnshire Society of London. He married the daughter of the late Mr. Henry Holmes Long, of the East India Company, and leaves to her the name of a man of honourable, indomitable mind, generous, warm-hearted, an excellent surgeon, and an excellent friend. She may feel assured that a very large number of persons in all classes and in all parts of the country are sympathising with her in her loss.

Mr. Rickard W. Lloyd writes: "Having enjoyed the friendship of Mr. Keetley for over 30 years, and having received many kindnesses at his hands, I may be excused perhaps for writing of him at this sad moment. Keetley always engaged in his work from a love of the science and a determination to practise it as skilfully and successfully as surgical records showed possible, and to improve upon those records if he could. The courage, thoroughness, ingenuity, and resource which he always displayed was especially shown in the 'eighties' and 'nineties,' when operations were increasing in magnitude and variety almost every day. He was one of the first to adopt Listerian methods, and in his operations he always from the beginning of his hospital career insisted upon thoroughness in antiseptic preparations and precautions. And though so bold a surgeon he was a very careful one. He allowed as little blood as possible to be lost, and he liked his patients to have the minimum of the anæsthetic administered, preferring ether to chloroform. I saw him on the day before he last went to Brighton (where he hoped to throw off a harassing cough, and where, alas! he died) open a knee-joint and remove a large thick fringe from its interior. Elsewhere he performed an operation for radical cure of a very large scrotal hernia. Those cases were in private practice. Afterwards, on the same day, I saw him at the hospital excise a malignant growth involving coils of intestines. Such is an ordinary sample of the operations he had been performing on several days a week for so many years, and the general verdict upon Keetley's mass of varied, bold, and ingenious operative work must be that the results were extraordinarily good. Keetley's social talents were great, despite his infirmity of deafness. He was exceedingly interesting, original, and generally amusing in his speeches, and a very clever artist. Many years ago in the dissecting room at St. Bartholomew's Hospital when he was a demonstrator, I remember the enlightening drawings in coloured chalks that he made in explaining dissections, and the kindliness and the readiness with which he always assisted us as students. I have since seen him illustrate his surgical work scores of times with clever drawings which he made with amazing rapidity and exactness. I have seen many humorous and caricature drawings that he has made when out of the range of some speaker—and unfortunately deafness, his great misfortune in life, often placed him there."

---

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Marcus P. Hatfield, professor of pediatry in the Chicago College of Physicians and Surgeons.—Dr. Theodor Sämisch, formerly professor of ophthalmology in the University of Bonn.—Dr. Max Jordan, extraordinary professor of surgery in the University of Heidelberg, at the early age of 45 years. He was for many years assistant to Professor Czerny, and had published a number of researches and encyclopædic articles on surgical subjects.—Dr. Kell, *oberarzt* of the Plauen Municipal Hospital, from blood-poisoning contracted in the performance of his hospital duties.

---

ROYAL MICROSCOPICAL SOCIETY.—At a meeting of the Royal Microscopical Society held on Nov. 17th Mr. Edward Heron-Allen read a short paper on the Recent and Fossil Foraminifera of the Shore Sands of Selsey Bill in Sussex, many hundreds of foraminiferous shells being at the same time exhibited as lantern pictures. Mr. Conrad Beck showed for Mr. J. W. Gordon a microscope lamp possessing several novel features, one of them being that when the light was focussed on an object the image of the incandescent filament or other source of light was not visible in the field. Several ladies were present, this being the first meeting which the rules permitted them to attend.

## NOTES FROM CHINA.

(FROM OUR OWN CORRESPONDENT.)

### *Climatic Bubo.*

AT the Budapest meeting of the International Medical Congress in the section of Tropical Medicine a discussion was raised by Professor Gabbi of Rome on the subject of climatic bubo, and though the account given in your issue of Sept. 18th was necessarily a brief summary, it was not difficult to see that there was considerable doubt in the minds of almost all the speakers as to whether the disease is a specific and separate morbid entity. For some years past I have been puzzled by this complaint, and having been fortunate to meet with a series of eight cases during the past year I may perhaps be allowed to add a few notes concerning it. The cases occurred among Europeans; five of these belonged to a regiment which had arrived a little over a year ago from South Africa. The other three were foreigners who have been resident in Peking for several years. None of the cases showed signs of venereal disease, though six had from time to time exposed themselves to the chance of infection. As in the case of tuberculous joints, the patients usually give a history of having injured themselves, remembering an instance where they felt a sudden pain on some occasion, but none of the incidents mentioned were such as would cause mischief in glands not already inflamed. The groin glands were swollen, hard, painless, and in six of the cases suppuration took place. In the other two there was no raised temperature throughout, nor was there any leucocytosis, filariasis, or malaria. Beyond finding staphylococci, and, in one case, streptococci in the pus, there was no trace of other bacterial organisms uniformly present which could be accounted etiological factors. There are cases of gonorrhœa in which long after the gonococcus has disappeared one can still find staphylococci in the urethral mucus, and it is necessary to pay particular attention to the clinical history and to look for any possible signs of venereal disease. The health otherwise of these cases was unaffected, and the general physique was good. One inclines to the opinion that this disease is due to inflammation caused by some toxin rather than direct invasion by bacteria. It awaits a more particular investigation, as the view held that it is due to a lessened resistance to microbic infection does not in any way advance matters. As for treatment, complete rest is the most prudent course, and two weeks in bed will sometimes, but not always, tide over the chance of suppuration, but where this does take place simple puncture by a bistoury and application of a Bier's suction glass renewed three or four times, once daily, will be found a more expeditious treatment than by extirpation or scraping. In employing the last method small glands which are not touched by the spoon take up the burden of the scraped glands and considerably lengthen the period of recovery. Internally, iodferratose or the syrupus ferri iodidi of the Pharmacopœia are useful. The tissues surrounding the glands are free from inflammation; in fact, there are absolutely no other clinical symptoms beyond the localised groin glandular swelling. Climatic bubo is a diagnosis of comparatively recent date, but from the experience of other medical men in China who have met with cases of it the general feeling is that it is a distinct and separate pathological entity the etiology of which is still unknown.

### *Research Work in China.*

The above paragraph deals with only one of many medical problems which await detailed investigation on the spot. A short time ago the leading Shanghai paper, the *North China Daily News*, drew attention to the wide scope for research work locally and invited the ratepayers to take up the matter and secure the services of an expert pathologist to work in the municipal laboratory. The administrative duties of the medical officer of health and his assistants leave them scant time for devoting themselves to research. The causes of variation in virulence of small-pox vaccine; cholera antitoxic serum; the suitability of fruits and vegetables as media for the growth of certain pathogenic organisms; preventive inoculation against cattle plague; the causation of beri-beri; the incubation period of rabies in China; the prevalence of Malta fever, sprue, and dysentery are but a few

of the questions which require elucidation. The paper suggested that the schools of tropical medicine in England, America, and the Continent should be invited to avail themselves of the use of the well-equipped municipal laboratory by sending out experts to undertake research along certain defined lines. There can be no doubt of the field for such work, and a hint might be dropped here to our English tropical schools of medicine to look to their laurels in this matter, for it appears that American universities have already formulated plans for establishing research laboratories in China. The University of Pennsylvania has already undertaken, in Canton, the establishment of a medical school that shall have well-equipped research laboratories and whose staff shall consist of men fully qualified to conduct investigation. Harvard, Yale, and Virginia Universities have also formulated plans. One of the outline schemes is as follows:—

*Research Department.*—Investigation concerning diseases peculiar to China. All the instructors to be men engaged in such study, and capable of imparting the spirit of inquiry to their students. The training of men who shall be the leaders in research in China. Study of methods for improving the hygiene of the population. Emphasis on preventive medicine, with inaugurations of campaigns of education regarding infectious diseases. Exact studies regarding the principles of hygiene for Westerners in the tropics, emphasising especially diet and clothing.

While wishing every success to the fulfilment of this scheme, it would be a pity if the responsibility for medical research and education and all the opportunities it offers should be allowed to be assumed by American universities alone. There is plenty of room for all, and, as far as England is concerned, the good work at present being so conscientiously carried out by British doctors at Shanghai, and at medical schools such as those at Peking, Hankow, Hangchow, &c., shows that up to the present moment England is in the forefront of the movement.

Oct. 27th.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

### *Medical Privilege.*

THE Full Court of Victoria held last year that under Section 55 of the Victoria Evidence Act a medical man could not disclose communications made to him by a patient nor disclose any knowledge acquired from his professional observation. A case has just been brought forward in which the National Mutual Life Assurance Company declined to pay a death policy on the ground that the holder had suppressed facts as to her health on taking out the policy. The company relied for their case on the evidence of Mr. E. T. Thring, of Sydney, but according to the previous decision his evidence could not be taken. The matter is to be taken to the High Court on appeal.

### *Melbourne Medical School.*

The annual report of the Dean of the Faculty of Medicine sets out that the number of medical students on the Register was higher than in any previous year. The figures given for students taking full courses were in 1908: males, 302; females, 21; total 323; 1909: males, 311; females, 15; total 326. The recognition of St. Vincent's and the Alfred Hospitals as clinical schools was completed, and there was reason to believe that facilities for teaching would be much increased in the new Melbourne Hospital. The proposals made by the faculty and approved by the council under the Stewart bequest should greatly stimulate the teaching of anatomy, physiology, pathology, medicine, and surgery, and a new department of neurology was contemplated. A committee has been appointed to revise the curriculum. At the last Australasian Medical Congress, out of 800 members 300 were trained in the Melbourne school.

### *Veterinary School, Melbourne.*

Professor Gilruth, the recently appointed professor of veterinary medicine in the Melbourne University, reports that the Research Institute, to which is attached a dissecting-room, is nearing completion. Plans for a general veterinary hospital and operating theatre were being prepared, and everything should be in readiness for the opening of the session of 1910.

### *Private Hospitals in Melbourne.*

A statement has recently been made that a number of so-called private hospitals in Melbourne are in reality places of doubtful, or more than doubtful, repute. The chairman of the Board of Health states that he has found that only 12 private hospitals are legally on the register. The Act requires registration to be renewed annually, but has hitherto apparently been ignored by all concerned. A report was being prepared, but the town solicitor advised that the existing regulations only gave power to supervise the structural requirements, and did not permit of any objection to the character of the persons in charge.

### *Melbourne Hospital Elections.*

A scheme has been prepared by the staff of the Melbourne Hospital with the intention of abolishing the present system of staff election by vote of subscribers. Under the proposed scheme the members of the present staff remain in office until the age of 60 years, and changes from the outdoor to indoor appointments are to be made in order of seniority. Future appointments to the staff are to be made by the hospital committee acting on the advice of a special board, to be composed of representatives of the University, of the staff, and of the committee. This advisory board would examine the credentials of candidates and make a selection, so that practically it holds the power of appointment. The general committee has not yet finally dealt with the proposal, but so far it has not manifested any keen sympathy. Only two or three members of the staff are adverse to the scheme, which will in all probability be eventually adopted, though possibly with some modification as to the automatic succession from outdoor to indoor appointments. It is not contended that the present system has resulted in any notable faulty appointment, but the scenes connected with the election have rendered existing methods distasteful to the majority of those called in to take part. A strong point has been made of the fact that five or six of the most promising younger practitioners have refused to face the election ordeal for the Melbourne Hospital, and have joined the staff of another institution.

### *Hospital Sunday, Melbourne.*

The Hospital Saturday and Sunday collection in Melbourne just taken has resulted in a larger total than that of any year since 1888, when the "boom" was at its zenith. The amount received is £7372, an increase of nearly £300 on the previous year. The largest individual collection was made by the police and totalled £935. The denominational collections as usual seem to show the Presbyterian adherents as much the most wealthy.

### *Dental Congress.*

The second congress of the dental profession in Australasia was opened on Oct. 25th at the Wilson Hall of the Melbourne University by the Governor-General. The president of the congress was Mr. J. Iliffe of Melbourne, and vice-presidents were appointed from all the other Australian states and New Zealand. Many papers have been contributed by leading practitioners in England and the continent.

### *Tuberculosis in New South Wales.*

At a gathering in aid of the Consumptive Home at Strathfield Sir P. Sydney Jones stated that the loss of life from tuberculosis in New South Wales during the last 33 years amounted to 42,912 persons. Assuming each of these meant a loss of £200 to the State, it represented a total loss of £8,500,000 out of a total population which did not amount to 2,000,000.

### *Insanity in Australia.*

Dr. Eric Sinclair, Inspector-General for New South Wales, reports that the number of officially insane under cognisance in that State on Dec. 31st, 1908, was 5705. The increase for the year was 98, which was below the average of the last 20 years. The proportion of insane to the general population was 1·281. The average cost per patient was £30 17*s.* 10½*d.* per annum. In Queensland the number of insane under control on Dec. 31st, 1908, was 2189, an increase of 111 on the previous year, which is more than double the average annual increase for ten years past. The proportion of insane to population is given as 3·92 per 1000. The cost per patient was £22 2*s.* 9*d.* Dr. J. B. Cleland reports the number of insane in South Australia as 1051, an increase of 32, and the proportion to population about 2·50 per 1000.

Oct. 26th.

# Medical News.

UNIVERSITY OF OXFORD.—The following have passed the examination for the Diploma in Public Health:—

*Part I.*—C. V. Aserappa, M. N. Balsara, H. M. Crake, J. Fortune, S. K. N. Kabriji, J. B. Mama, W. S. Stalker, L. R. Tosswill, and W. F. J. Whitley.

*Part II.*—J. Fortune, I. C. Keir, W. S. Stalker, and L. R. Tosswill.

FOREIGN UNIVERSITY INTELLIGENCE.—*Albany Medical College:* Dr. Victor C. Myers has been appointed Assistant Professor of Chemistry and Toxicology.—*Cairo:* Dr. Engel Bey, Director of the Statistical Department of the Board of Health, has been granted the title of Professor by the Prussian Ministry of Education.—*Genoa:* Dr. A. Morselli has been recognised as *privat-docent* of Psychiatry.—*Göttingen:* Dr. Hans Doering, *privat-docent* of Surgery, has been granted the title of Professor.—*Gratz:* Dr. Otto Loewi of Vienna has accepted the chair of Pharmacology and Pharmacognosis.—*Königsberg:* Dr. Hans Strehl, *privat-docent* of Surgery, has been granted the title of Professor.—*Memphis Medical College:* Dr. E. S. Cain has been appointed Lecturer on Medicine and Pharmacology; and Dr. A. D. West as Lecturer on Surgery and Orthopædics.—*Naples:* Dr. Francesco Accordini has been recognised as *privat-docent* of Internal Pathology.—*Palermo:* Dr. N. La Meusa has been recognised as *privat-docent* of Dermo-syphilo-pathology.—*Rome:* Dr. Angelo Isaia has been recognised as *privat-docent* of External Pathology; Dr. Alfonso Neuschüler as *privat-docent* of Ophthalmology; and Dr. F. Laureati as *privat-docent* of Pediatry.—*Rostock:* Dr. Th. Geis is retiring from his Professorship of Surgery.—*Tübingen:* Dr. Karl Schlayer, *Oberarzt* of the Medical Clinic, has been awarded the Karl Faber prize for his researches on the pathology of the kidneys.—*Turin:* Dr. E. Martini has been recognised as *privat-docent* of Surgical Pathology.

A STUDY IN THE HEREDITY OF JEWISH SCHOOL CHILDREN.—Professor Karl Pearson has written to the Education Committee of the London County Council stating that recent work at the Francis Galton Laboratory of National Eugenics, University College, seems to indicate that heredity is far more closely related than environment to the physique and mentality of the child, and asking for permission to conduct an investigation, as regards their vision, of the parentage and home conditions of Jewish children in certain schools in the East-end of London. The mode of procedure would be to examine the eyesight of all the children in the schools selected, and to make inquiries at their homes, where the extent of Hebrew character-reading and the size and lighting of the rooms would be noted, as well as other indications of good or poor environment, and the opinion of the teachers would be obtained as to the state of the clothing, &c., of the children. The astigmometer would be the only instrument used and the home inquiries would be conducted by persons of wide experience of Jewish families. The permission asked for has been granted provided that the experiments are conducted under the supervision of the medical officer.

LONDON POST-GRADUATE ASSOCIATION.—We are informed that the London Post-Graduate Association is enlarging its scope. As is now well known, the association issues cards which admit to any part of the clinical instruction at the several institutions which is open to their own students, including operations and post-mortem examinations, for a moderate fee. For those practitioners who desire to see as many cases as possible within a short period the association supplies a very real need; but the time has now come when it is felt that London should take a more important place as a centre for post-graduate study, and with this end in view special classes for qualified medical men only are being held at the following hospitals: University College Hospital, the Westminster Hospital, the Brompton Hospital for Consumption and Diseases of the Chest, the National Hospital for the Paralysed and Epileptic, and the Medical Graduates' College and Polyclinic. For these classes a small additional fee is charged, and information concerning them can be obtained at the individual hospitals. The office of the London Post-Graduate Association is now at 20, Hanover-square, London, W., where the secretary may be seen daily between the hours of 10.30 and 1, except on Saturday. Particulars may also be obtained on written application.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Nov. 17th the following were added to the panel of lecturers in physiology:—Mr. W. B. Hardy, M.A., F.R.S., Professor A. F. Stanley Kent, M.A., Dr. V. H. Veley, D.Sc., M.A., F.R.S., and Professor Swale Vincent, M.D., D.Sc. Sir T. Lauder Brunton has been appointed chairman of the Physiological Committee, and Professor H. R. Kenwood, M.B., D.P.H., and Professor W. J. R. Simpson, C.M.G., M.D., F.R.C.P., D.P.H., have been appointed representatives of the University at the Third International Congress of School Hygiene to be held at Paris in August, 1910.

GUARDIANS AND TUBERCULOSIS.—The Treatment of Consumptives Committee of the Eastbourne board of guardians has circularised the 12 boards in the county of East Sussex, stating that it was of opinion that consumptive patients should be removed from the workhouse infirmary and provided for in a special building arranged on sanatorium principles, and asking each board to send delegates to a conference to consider a proposal to secure the combination of boards of guardians in the county for the purpose of providing separate accommodation for the isolation and treatment of patients suffering from phthisis. Ten of the 12 boards have offered to send delegates, and the conference, it is proposed, shall be held at Lewes early in the new year. A similar conference to that proposed in East Sussex was held at Croydon earlier in the year representative of boards of guardians in the county of Surrey.

RELIEF OF DESTITUTE CHILDREN IN BRIGHTON.—The work of the Brighton Police-aided Scheme for Clothing Destitute Children is to a certain extent explained by its title, but some figures and facts presented at the annual meeting on Nov. 30th still further unfold the splendid character of the work. While on their beats policemen become accustomed to seeing young children day after day perhaps going to, or returning from, school. If they think they are insufficiently clad inquiries are made, and if the parents are deserving the child participates in a periodical share-out of clothing during the winter months. This year 851 children—487 boys and 364 girls—were relieved in this manner. But the work has not ended here. In the last 12 months the same scheme has also supplied 60 girls between 14 and 19 years of age with complete outfits for domestic service; situations were found for all of them, and nearly all of them are now earning a livelihood. Seven cripples were also supplied with crutches. It is noteworthy that a good deal of the clothing distributed is made by the policemen's wives at the Police Institute.

THE COTTAGE BENEFIT NURSING ASSOCIATION AND THE STATE REGISTRATION OF NURSES.—On Dec. 7th Lady Ancaster presided at the half-yearly meeting of the general council of the Cottage Benefit Nursing Association at Denison House, Vauxhall Bridge-road. The secretary, Miss Broadwood, having read the report which appealed for more subscribers, the Hon. Sydney Holland addressed the meeting on the subject of the State registration of nurses. He said that he opposed registration because it would tend to deteriorate nursing and not improve it. The supporters of registration claimed that if nurses were registered the public would have a guarantee that a nurse had had a proper training and was a suitable person for the work. No one had ever suggested that registration should be compulsory. Character and suitability were as important as technical knowledge, and character could not be tested by examination. Too much was made of examinations nowadays. From his own experience he knew that many nurses, who passed examinations did not make the best nurses, and some who came out at the top could never make good nurses. If registration were adopted the standard of examination would have to be low in order that the necessary number of women might pass the test. Nurses would not submit to a hospital training if the State said that only registration was necessary to become a good nurse. Examination would lower the standard of technical knowledge. Hardly any medical man would be so stupid as to recommend a nurse simply because she was on the Register. He would want to know something

about her character. With regard to the public, the question only concerned the rich. The poor had such nurses as the Queen's Jubilee Nurses, the nurses of an association such as the Cottage Benefit Nursing Association, and the Poor-law and infirmary trained nurses. Registration would not even be a guarantee of technical fitness, for the methods of treatment were constantly changing and the physical capacity of the nurse might also change. In order that the public might judge of the training which a nurse had had, Mr. Holland suggested the publication of an official directory.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: THE WEBER-PARKES PRIZE AND MEDALS.—The next award under this foundation will be made in 1912, and the adjudicators have selected as the subject of the essay for that occasion: "The Influence of Mixed and Secondary Infections upon Pulmonary Tuberculosis in Man, and the Measures, Preventive and Curative, for Dealing with Them." All essays, together with any preparations made in illustration of them, must be transmitted to the registrar of the College during the last week of May, 1912, in accordance with the regulations relating thereto, copies of which will be forwarded from the College on application. The award will be made at some time previous to Oct. 18th in that year, on which day the prize and medals will be presented to the winners.

UNIVERSITY OF DURHAM.—The King in Council has been pleased to appoint the Duke of Northumberland, Sir Hugh Bell, Bart., Miss E. M. N. Williams, M.D. Lond., D.P.H. Cantab., Mr. G. G. Butler, M.A., Mr. J. S. G. Pemberton, M.A., and Mr. John Wilson, M.P., to be members of the Senate of the University. At a meeting of the council of the University of Durham College of Medicine, Newcastle-on-Tyne, Sir George Hare Philipson, M.B., the President of the College, and Mr. J. E. Gibson, M.A., were unanimously elected as the two representatives of the council of the College to act on the Senate, as constituted under the University of Durham Act, 1908, while Dr. David Drummond and Professor Robert Howden were appointed to represent the Academic Board of the College on the new Senate.

CENTRAL MIDWIVES BOARD.—Special meetings of the Central Midwives Board were held on Dec. 1st and 2nd at Caxton House, Westminster, with Dr. F. H. Champneys in the chair. The Board considered the following charges amongst others against the midwives whose names are given below, and ordered them to be struck off the roll. Mercy Glew, that notwithstanding repeated warnings she persistently neglected to provide herself with a clinical thermometer or to take any steps to render herself competent to read the same, and that having been duly suspended from practice by the local supervising authority on account of having been in contact with a case of puerperal fever, she nevertheless continued to attend women as before, without having disinfected herself, her clothing, and her appliances to the satisfaction of the local supervising authority. Mary Ann Richardson, that being in attendance as a midwife at a confinement, the patient suffering from an offensive discharge, and having complained to her that she felt very ill, she did not send for a doctor. Elizabeth Taylor, that being in attendance as a midwife at a confinement, the patient suffering from puerperal fever, she did not send for a doctor. Georgina Martha Winfield, that being in attendance as a midwife at a confinement, the patient suffering from continual sickness and from diarrhœa, with a temperature of 103° F., she did not send for a doctor. Jane Booth, that being in attendance as a midwife at a confinement, the patient being ill, suffering from scarlet fever, she did not send for a doctor. Emily Bussey, that being in attendance as a midwife at a confinement, the patient being ill, suffering from suppressed lochia and headache, she did not send for a doctor. Jane Philpot, that being in attendance as a midwife at a confinement, the patient being seriously ill, with symptoms of puerperal mania, she did not send for a doctor. Louisa Blendell, Jane Finnegan, Mary Jane Rowlands, and Mary Ann Massey, that they were uncleanly and did not take with them to confinements the appliances and antiseptics required by the rules of the Board. Sentences on the following midwives after charges alleged against them had been considered were deferred: Mary Elizabeth Cornwall, Mary Morrall, Mary Jane Whittle, Catherine Williams, Elizabeth Gazey, and Susannah Morgan.

ROYAL SOCIETY OF MEDICINE.—A special general meeting of the Fellows of the Royal Society of Medicine will be held on Wednesday next, Dec. 15th, at 5 P.M., to consider a scheme, approved by the Council of the Society, for raising the money necessary to erect a suitable building on a new site. The scheme has far-reaching issues with regard to the future of the Royal Society of Medicine, and its adoption will no doubt be approached with due caution and, we trust, in the presence of a full attendance of Fellows.

THE BATTERSEA BROWN DOG MEMORIAL.—On Wednesday night the Battersea borough council decided, on the motion of Dr. L. S. McManus, seconded by Dr. J. T. Richards, to endeavour to arrange for the removal of the offensive inscription on the Brown Dog Memorial at Battersea and to substitute a truthful one. The recommendation of the Highways Committee was that the solicitor should negotiate for the return of the memorial to its donors. A deputation attended and urged that there should be no interference with the memorial or at most that the inscription should be altered in a manner agreeable to all parties. The Brown Dog was said to have an "educational value." During the discussion it was pointed out that the Commissioner of Police had written stating that special police protection was costing £700 a year. A member said a memorial which was the cause of so much acrimony and expense was necessarily a nuisance and ought to be removed.

UNIVERSITY OF LIVERPOOL.—Three new lectureships were instituted by the Council of the University of Liverpool at its meeting on Nov. 30th on the recommendation of the Senate and of the Faculty of Medicine: (1) a lectureship in orthopædic surgery to which Mr. Robert Jones, Ch.M.Liv., F.R.C.S. Edin., was appointed; (2) a lectureship in physiology, to which the present assistant lecturer and demonstrator, Dr. H. E. Roaf, was appointed; and (3) a lectureship in pharmacology, to which Mr. Owen T. Williams, M.B. Lond., M.R.C.P. Lond., was appointed. The lecturer in orthopædics will deliver a course of lecture-demonstrations during the summer term, which will be open to graduates and undergraduates alike. The lecturer in physiology will take special charge of the chemical physiology department. The lecturer in pharmacology was temporary lecturer in the subject during the last two sessions, he will supervise pharmacological research, and will hold a class in practical pharmacology, which is in the third year of the curriculum for the degree.

PROPOSED OPEN-AIR SANATORIUM FOR WORKING-CLASS CONSUMPTIVES IN MIDDLESEX.—For some time a movement has been on foot, having for its object the provision of an open-air sanatorium for working-class consumptives in the county of Middlesex. In furtherance of this object a largely attended meeting was held recently at Hillingdon Court, Uxbridge, by the kindness of Lord and Lady Hillingdon. The meeting was addressed by, amongst others, Dr. J. L. Lock (medical officer of health of the Uxbridge urban district), Dr. A. Charpentier (medical officer of health of the Uxbridge rural district), and Dr. J. J. Perkins (honorary secretary of the National Association for the Prevention of Consumption). It was pointed out at the meeting that the deaths from consumption in the county were nearly one-tenth of the total death-rate. A resolution was ultimately adopted supporting the scheme. Part of the money will be raised by a 20,000 crowns fund, subscriptions to which will be invited from all classes; when the sum has been collected and a beginning made an appeal will be issued for larger subscriptions. It is intended to erect buildings which, when completed, will accommodate 100 patients, and it is believed that by spending as little as possible on buildings (which will be on the pavilion plan) the total cost will not exceed £100 per bed. A start will be made as soon as £5000 have been raised, it being hoped to provide 30 beds, together with the administrative buildings, for this sum. Further accommodation will be added as funds permit. The beds are to be for the use of all suitable Middlesex cases whose cost of maintenance is guaranteed either privately, or by the local authorities, or other bodies or persons maintaining beds. The total cost per patient, it is considered, ought not to

exceed 25*s.* per week in a sanatorium with 100 beds. It was originally intended that public authorities should be asked to pay for the cost of establishing the beds they would maintain, but this was found unworkable in Middlesex. It is proposed to appoint a local representative in each district to supervise the local collection of funds, and the local banks will be asked to receive subscriptions. Mr. Andrew Clark, F.R.C.S., was elected representative for the Uxbridge district at the meeting.

A LECTURE on "The Prevention of Tuberculosis, the Larger Outlook," will be delivered on Monday, Dec. 13th (and not on the 15th, as had been previously announced), at the Municipal Buildings, Tottenham, by Dr. R. W. Philip of the Royal Victoria Hospital for Consumption, Edinburgh. Entrance will be by tickets, which can be obtained from the medical officer of health of Tottenham.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*Prorogation of Parliament.*

PARLIAMENT was prorogued on Friday, Dec. 3rd. Amongst the Acts which received the Royal Assent on that occasion was the Housing and Town Planning Act.

## HOUSE OF COMMONS.

THURSDAY, DEC. 2ND.

*The Prison Commission.*

Sir PHILIP MAGNUS asked the Secretary of State for the Home Department whether a vacancy was shortly to occur on the Prisons Commission; and whether, having regard to the fact that the commissionership which might be vacant had been held for some years by a member of the medical profession, he would undertake, in the event of the occurrence of a vacancy, to appoint a member of the medical profession to the post.—Mr. GLADSTONE replied: It is true that Dr. Donkin, one of the Prison Commissioners, retires shortly under the age rule, but I hope to be able to make arrangements which will ensure the continuance of the invaluable services which Dr. Donkin has rendered to the medical side of prison work. I hope at the same time to increase the strength of the prison administration in order to enable it to meet the greatly increased responsibilities thrown upon it by recent legislation.

*Infantile Mortality.*

Mr. JAMES STUART asked the President of the Local Government Board whether he could state the number of deaths in England and Wales of infants under one year per 1000 births in each of the years 1904 to 1908, and in the first nine months of each of these years and of the present year, distinguishing London, the 76 great towns, and the 142 smaller towns from the rest of the country.—Mr. BURNS replied (by written answer.): The following tables give the information asked for:—

I.—*Infant Mortality in each of the Years 1904 to 1908.*

| — | Deaths under one year to 1000 births in the years— | | | | |
|---|---|---|---|---|---|
| | 1904 | 1905 | 1906 | 1907 | 1908 |
| England and Wales ... ... ... ... | 145 | 128 | 132 | 118 | 121 |
| 76 great towns, including London... | 160 | 140 | 145 | 127 | 129 |
| London ... ... ... ... ... ... ... | 145 | 130 | 131 | 116 | 113 |
| 142 smaller towns... ... ... ... ... | 154 | 132*a* | 138 | 122 | 124 |
| England and Wales, less the 218 towns ... ... ... ... ... ... ... | 125 | 113*b* | 116 | 106 | 110 |

II.—*Infant Mortality in the First Nine Months of each of the Years 1904 to 1909.*

| — | Deaths under one year to 1000 births in the first three quarters of each of the years— | | | | | |
|---|---|---|---|---|---|---|
| | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
| England and Wales... ... ... | 149 | 131 | 135 | 113 | 115 | 106 |
| 76 great towns, including London ... ... ... ... ... | 165 | 142 | 148 | 118 | 123 | 114 |
| London ... ... ... ... ... ... | 149 | 129 | 133 | 110 | 110 | 104 |
| 142 smaller towns ... ... ... | 157 | 136*a* | 140 | 118 | 117 | 107*c* |
| England and Wales, less the 218 towns ... ... ... ... ... | 127 | 116*b* | 117 | 104 | 105 | 97*d* |

*a*, 141 small town *b*, less 217 towns; *c*, 143 small towns; *d*, less 219 towns.

# Appointments.

*Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to* THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BELL, C. W., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dunoon District of the county of Argyll.

BOYLE, JAMES, M.B., C.M. Glasg., has been appointed District Medical Officer by the Cardiff Board of Guardians.

BREND, W. A., M.B. Lond., Barrister-at-Law, has been appointed Lecturer in Forensic Medicine at Charing Cross Hospital.

COATS, GEORGE, M.D. Glasg., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon to the Hospital for Sick Children, Great Ormond-street

EDMOND, G. M., M.D., M.S. Aberd., has been appointed Medical Officer to the Post Office at Aberdeen.

GEE, OSWALD ARNOLD, M.B., C.M. Edin., has been appointed District Medical Officer by the Gloucester Board of Guardians.

GRIFFITHS, J. HOWELL, M.D., B.S. Lond., D.P.H. Lond., has been appointed Medical Superintendent at Gore Farm Hospital, Dartford.

HILL, A. T., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Llanrwst District of the counties of Carnarvon and Denbigh.

PEPPER, A. J., M.S., M.B. Lond., F.R.C.S. Eng., has been appointed Consulting Surgeon to St. Mary's Hospital.

ROBERTS, C. HUBERT, M.D. Lond., F.R.C.S. Eng., M.R.C.P. Lond., has been appointed Physician to In-patients at Queen Charlotte's Lying-in Hospital.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 per annum and fees.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—House Surgeon. Salary £130 per annum, with board and residence.

CARDIFF INFIRMARY (GENERAL HOSPITAL).—House Surgeon for the Ophthalmic and Ear and Throat Departments for six months. Salary £30, with board and laundry.

CHARTHAM, KENT COUNTY ASYLUM.—Third Assistant Medical Officer. Salary £145 per annum, with board, quarters, attendance, and washing.

DERBYSHIRE ROYAL INFIRMARY.—Two House Surgeons, a House Physician, and an Assistant House Surgeon. Salaries of three former £100 per annum, and of latter at rate of £60 per annum, with apartments, board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, board, &c.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for six months. Salary at rate of £100 per annum, with luncheon and tea.

ENFIELD AND EDMONTON ISOLATION HOSPITAL, Winchmore Hill.—Resident Assistant Medical Officer. Salary at rate of £150 per annum, with rooms, rations, and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—Ten Clinical Assistants in the Out-patient Departments.

GRIMSBY AND DISTRICT HOSPITAL.—House Surgeon. Salary £120 per annum, with board, lodging, a tendance, and washing.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Second Resident Medical Officer, unmarried. Salary £50 per annum, with full board and laundry.

INDIAN MEDICAL SERVICE, India Office, London.—Thirteen Commissions in His Majesty's Indian Medical Service.

LISTER INSTITUTE OF PREVENTIVE MEDICINE, Chelsea-gardens, S.W.—Senior Assistant in the Bio-Chemical Department. Salary £350 per annum.

LIVERPOOL INFIRMARY FOR CHILDREN.—Resident House Surgeon. Also Resident House Physician. Salaries at rate of £60 per annum, with board and lodging.

LONDON HOSPITAL, Whitechapel, E.—Anæsthetist.

LONDON LOCK HOSPITALS.—House Surgeon to the Female Hospital, Harrow-road, W. Also House Surgeon to the Male Hospital, 91, Dean-street, Soho, W. Salary in each case £100 per annum, with board, lodging, and washing.

MANCHESTER, NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Anæsthetist. Salary £15 per annum.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Assistant House Surgeon, unmarried. Salary £75 per annum, with residence, board, and washing.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—Lecturer on Mental Diseases.

MIDDLESEX HOSPITAL, W.—Assistant Ophthalmic Surgeon.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood.—House Physician. Salary £75 per annum, with board, residence, &c.

NEWARK-ON-TRENT HOSPITAL AND DISPENSARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon. Salary £90 per annum, with apartments, board, &c.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Radiographer.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary at rate of £60 per annum, with board, residence, and laundry.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Weber-Parkes Prize of 150 guineas and two silver medals.

ROYAL EYE HOSPITAL, Southwark, S.E.—Honorary Assistant Surgeon.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.—Honorary Medical Radiographer. Also Honorary Surgeon.

SHEFFIELD, EAST END BRANCH OF THE CHILDREN'S HOSPITAL.—House Surgeon to Out-patients. Salary £70 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon. Also Assistant House Physician. Salary £50 per annum each, with board, lodging, and washing.

SHEFFIELD UNION HOSPITAL, Firvale.—Assistant Medical Officer (female). Salary £100 per annum, with apartments, rations, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Salary £30, with board, lodging, and laundry.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WEST HAM AND EAST LONDON HOSPITAL, Stratford, E.—Honorary Dental Surgeon.

WEST LONDON HOSPITAL AND POST-GRADUATE COLLEGE, Hammersmith-road, W.—Clinical Assistants, Throat, Nose and Ear, Skin, and X Rays, Pathological Laboratory, &c.; and Three Casualty Officers.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary at rate of £80 per annum, with board, rooms, and laundry.

---

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Goole, in the county of York; at Harpenden, in the county of Hertford; and at Holywell, in the county of Flint.

# Births, Marriages, and Deaths.

## BIRTHS.

SAVILL.—On Dec. 3rd, at "St. Albans," Sea-road, Bexhill, the wife of Philip Savill, M.D., of a son.

WALKER.—On Dec. 2nd, at Kensington-crescent, the wife of Captain N. Dunbar Walker, R.A.M.C., of a daughter.

WARD.—On Nov. 30th, at The Tiled House, West Byfleet, Surrey, the wife of V. Godsalve Ward, M.D. Lond., of a son.

## MARRIAGES.

DAVIDSON—DARBYSHIRE.—On Nov. 30th, at Holy Trinity Church, Brompton, Duncan Davidson, M.B. Oxon., M.R.C.S., L.R.C.P., of Coventry, to Beatrice Alice, daughter of Mr. and Mrs. Darbyshire of Pietermaritzburg.

## DEATHS.

BENSLEY.—On Dec. 5th, at Kelfield-gardens, North Kensington, W., Charles Egbert Wimond Bensley, M.D., Lieutenant-Colonel, late I.M.S. (retired), and H.E.I.C.S., in his 76th year.

BLAKE.—On Dec. 4th, at Old-court Mansions, Kensington, Frederick William Blake, M.D., Deputy Inspector-General, R.N., aged 85 years.

COCHRANE.—On Dec. 4th, at Middlesex Hospital, James Mackeand Cochrane, M.D., aged 57 years.

HARVEY.—On Dec. 8th, at 85, Approach-road, Bethnal Green, E., William Harvey, M.P.S., in his 77th year, who for nearly fifty years faithfully discharged the duties of Dispenser at the City of London Hospital for Diseases of the Chest (Victoria Park Hospital). Funeral service will be held at the Church of St. James-the-Less, Bethnal Green, on Saturday, at 2.30 P.M. Interment at Ilford.

KEETLEY.—On Dec. 4th, suddenly, at Brighton, Charles Robert Bell Keetley, F.R.C.S., senior surgeon to the West London Hospital, of Grosvenor-street, London, W., aged 61 years.

WARD.—On Nov. 28th, at his residence, Belmont, Castle Connell, Ireland, Major Espine Charles Robert Ward, F.R.C.S.I., late Army Medical Staff, aged 61 years.

---

***N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.***

# Notes, Short Comments, and Answers to Correspondents.

## A QUESTION OF PRIORITY.

WE have received a letter from Dr. J. Miller of Glasgow, which refers to a question of priority in research and in which he asks us to correct a false impression given by a report in THE LANCET of Sept. 7th, 1907, p. 704. The report in question was an abstract of a communication read before the Pathological Section of the British Medical Association at the Exeter meeting two years ago, and began with these words: "Dr. David Lawson (Banchory) then detailed some observations upon *The Elimination of Opsonins by the Excretory Organs*, which had been carried out in the Banchory Laboratory in conjunction with Dr. James Miller." This report did not come to Dr. Miller's notice at the time but has since been quoted in a book on Vaccine-therapy which on its authority attributes the research in question to Dr. Lawson and not to Dr. Miller. The fact was that Dr. Miller carried out the investigations in the laboratory at the Nordrach-on-Dee Sanatorium as the guest of Dr. Lawson, who quoted the results at the Exeter meeting, but with the sanction of Dr. Miller, to whom he attributed the work. We have Dr. Lawson's full assurance of this, for as soon as Dr. Miller had communicated to him the passage in the book to which we have referred he replied that he was scrupulously careful to preface his remarks at Exeter by stating that the investigation was not his own, but that the credit of the ideas and their carrying out was Dr. Miller's, and that if the work had been published in such a way as to give a different impression it had neither his sanction nor approval. Dr. Lawson has also written to the author who quoted our report asking him to accord Dr. Miller his proper credit in future issues of his book. We may add that we published Dr. Miller's complete observations in THE LANCET of April 4th, 1908, under the title of "Note upon the Tuberculo-Opsonic Index of the Urine and Sweat in Health and Tuberculous Disease."

We, perhaps, inadvertently did an injustice to both Dr. Miller and Dr. Lawson, and are glad to take this opportunity of giving the former gentleman the credit of his research and of clearing the latter of an imputation which cannot fail to be unpleasant to any scientific observer.

## "DR. GUILLOTIN."

*To the Editor of* THE LANCET.

SIR,—Dr. Watkin W. Jones is probably better acquainted with the history of the guillotine than myself. In venturing to question the validity of the claim he seeks to establish for Louis I have simply quoted from Lenotre, who is responsible for my statements.

Lenotre attributes distinctly the invention to Guillotin. The merriment to which Dr. Watkin Jones alludes, and with which (according to the *Moniteur*) Guillotin's remarks were received, referred not to the proposal itself, but to the jocular offer of cutting off the heads of the members of the constituent assembly without their knowing it. The machine chosen, says Lenotre, was "celle qu'avait proposé l'auteur de la machine." Louis was only *consulté* and submitted an *avis motivé*, a report, in which he speaks of instruments in use previously in Germany, Denmark, and England which might serve as a model.

A certain Guédon was then commissioned to make a machine in accordance with the description of Louis, but this was not done, and Guillotin "qui tenait à son idée" applied to Samson, *exécuteur des hautes œuvres*, and the instrument which was first tried on Pelletier was ultimately constructed by a friend of Samson called Schmidt. Speaking of hecatombs of victims decapitated shortly after "on peut se demander," says Lenotre, "ce qui serait advenu si le Dr. Guillotin n'avait pas conçu le sinistre héritier de son nom." I will add (always according to Lenotre) that Louis is said to have been greatly grieved at his name being attached to the invention. The subsequent change of designation might be taken also as indicating that Guillotin was chiefly concerned in the invention.—I am, Sir, yours faithfully,

Route de la Croix, Le Vesinet, Nov. 30th, 1909. OSCAR JENNINGS.

## FRAUDULENT DIPLOMAS IN RUSSIA.

SOME years ago the Russian Minister of the Interior, with the object of suppressing the name "dentist" in favour of the term "doctor of dentistry" for those who had gone through a dental course in special schools, issued a circular forbidding dentists to receive pupils. But for such students as were already being taught by dentists he fixed a period for examination in the universities, conditional on the presentation of a certificate by their teachers. Now that the latest period for such examination is running out, a peculiar form of fraud, says the *Novoe Vremya*, is being perpetrated in many Russian towns. It has been found that in Kieff, Smolensk, and other large towns, doctors of dentistry have been giving false certificates to people who have never been connected with them, and those who bought the certificates submitted them to the university and obtained in exchange a dental degree carrying with it the right to reside anywhere. As a consequence, says the journal, a large number of Jews have settled in

certain towns and are engaged in various businesses, not necessarily in the dental direction. It is averred that as many as 5000 such degrees have been issued. According to the *Smolensk Viestnik*, many arrests have taken place in connexion with this fraudulent practice, including medical officers in the public services. Particulars of a similar fraud have also been published. Of late many applications have been made to the Kieff University for verification of dispensers' certificates, of which large numbers, it would appear, have been forged and sold, and owners of pharmacies have been obliged to apply to the universities alleged to have issued the certificates to verify them before engaging dispensers.

## PRINTING "IN REVERSE."

*To the Editor of* THE LANCET.

SIR,—With reference to the recent letter of "Amateur Printer," may I recall a note which appeared in the *Rapid Review* of April, 1904, which reviewed an article in the *Leisure Hour*? It was stated that two scientists had invented a reformed alphabet and recommended that the characters should be "white on black" instead of "black on white," and also that the speed of recognition was about ten times less in the latter style than the former. This has always seemed to me somewhat doubtful. I have also heard that the private newspaper of the Paris *croque-morts* (undertakers' men) is thus printed, although I have never seen a copy. I would remind readers of THE LANCET whose sight is impaired of "a very simple contrivance to aid myopic and other failing eyes, especially in reading," used and recommended by Sir W. T. Gairdner, whose letter with the foregoing heading was published in THE LANCET of Oct. 1st, 1904, p. 980. I tried it and found it useful.

I am, Sir, yours faithfully,

London, Nov. 30th, 1909. MYOPE.

## DANGEROUS HAIR DYES.

DURING the past few years nitrate of silver has to some extent been replaced in hair dyes by paraphenylene-diamine, with the result that numerous cases of poisoning have been reported in the medical journals. The chemistry of this substance and its mode of action are described in the *Pharmaceutical Journal* of Oct. 30th. The toxic effects are attributed to the formation, by oxidation, of quinone di-imide, which is a powerful irritant both of the skin and of the mucous membrane. One of the most popular hair dyes containing paraphenylene-diamine is put up in two bottles, one containing hydrogen peroxide solution, and the other an ammoniacal solution of the dye. The hair is directed to be freed from grease, after which the dye solution is applied and then the hydrogen peroxide. It is said that in skilful hands it is possible to obtain fine tints, but the preparation is a dangerous one. Another formula directs the solution of the dye in a mixture of water, glycerine, and alcohol, with or without ammonia. If ammonia be present it is not considered necessary to remove grease from the hair before applying the solution. Even more dangerous hair dyes are prepared from paraphenylene-diamine and diamidophenol with potassium bichromate, the proportions of the ingredients being varied according as a black brown or blonde tint is desired. Such preparations sometimes cause actual burns, followed by an extensive eczema which is very difficult to cure. In one form or another the use of paraphenylene-diamine as a hair-dye has been repeatedly shown to cause these troubles, accompanied by itching, urticaria, nausea, nervous symptoms, sleeplessness, dizziness, epileptiform attacks, and syncope, and in several instances death has resulted.

## HEALTH MATTERS IN SOMALILAND PROTECTORATE.

Mr. H. E. S. Cordeaux, C.B., C.M.G., Commissioner of this Protectorate, in his report to the Colonial Secretary for the year ended March 31st, 1909, estimates the population (no actual census having ever been taken) at about 350,000, including about 100 Europeans and whites. The general public health during the year was good and there was no serious outbreak of disease of any kind. There was an increase in the number of patients attending the hospitals pretty evenly distributed. This increase has not affected the death-rate or the number of in-patients, and may be attributed to the large number of cases of simple skin diseases. Every endeavour has been made to keep a supply of simple drugs to meet these requirements. The three coast hospitals are chiefly visited during the winter months—Berbera, for example, having a population of from 20,000 to 30,000 during that time, whereas during the summer 3000 to 4000 is probably an outside figure. This variation has to be taken into account when considering statistics. This migratory condition of the population is due to the excessive heat on the coast during the summer, the impossibility of feeding stock in the neighbourhood, and the many conditions governing trading of all sorts. There are two great considerations which materially affect the general public health. These are, first, that the people are practically all Mahommedans, and therefore total abstainers from alcohol; and, secondly, the indifferent precaution taken either against excessive heat by day or chill at night by the Somalis. In connexion with abstinence from alcohol, Mr. Cordeaux considers there "may be mentioned the very marked difference shown under anæsthetics by the Somalis as compared with European and other races addicted to the use of this stimulant. Serious respiratory trouble is practically never met with and struggling is quite unusual, yet the people are of a both nervous and excitable temperament. In few cases only do the natives either smoke or take tobacco or its usual concomitant, coffee. Regarding the second condition to which I have drawn attention, the native dress is the same by day as night and consists of cotton only. Wool is seldom, if ever, worn, nor is the Somali provident enough to provide himself with a blanket. Taking this into consideration we account for a very large percentage of the total cases of respiratory diseases, rheumatism, and nerve pains. The application of another Somali trait of character goes some way to explain their freedom from sun troubles, for, in contradistinction to the imported Indians, they drink an incredibly small amount of fluid when exposed to the sun on the march, being fully convinced that by such indulgence staying power is affected and heat stroke more liable to occur both in man and beast." In regard to the general sanitary condition of the protectorate and its chief towns, the Commissioner testifies that a considerable improvement has taken place. General civil hospitals exist at the three coast towns of Berbera, Bulhar, and Zaila. At Berbera there are also an isolation hospital for tuberculous patients and a single-ward building for the accommodation of small-pox cases. A disinfecting station also exists at Berbera consisting of two rooms and a caretaker's hut; this is furnished with a small "Clayton disinfector" capable of meeting all probable requirements. Bulhar and Zaila are provided with temporary matting huts or tents to meet any contagious disease outbreak. The inland or up-country camp hospitals are at Sheikh and Burao. At the former the civil camp hospital exists separately from the military hospital, whilst at Burao civil and military patients are attended by the military medical officer, the Civil Medical Department furnishing a part of the equipment. The number of patients treated at the civil hospitals in the year 1908 was 17,012, as compared with 10,458 in 1907 and 8526 in 1906.

## SMELLS AND THEIR CLASSIFICATION.

*To the Editor of* THE LANCET.

SIR,—It is said that "necessity is the mother of invention," therefore it seems that there has been only small inconvenience to our predecessors by the absence of smell classification, otherwise such would have been accomplished long ago. With the advent, or I should say the perfection, of the education of the present day, I think that there arises now some call for classification of smells. When I was a student it struck me very forcibly that medical lecturers laboured under a great difficulty in describing the article or substance they had to deal with in the absence of the specimen, whereas they could describe the colour, taste, consistence, but when it came to smell they were baffled completely. For the want of a standard, the vocabulary so far as the adjectives are concerned was used profusely, and at the end of it all no one was any the wiser as to the character of the smell. To illustrate my point I will refer you to the British Pharmacopœia, 1885, a product of a very learned body, and therein you will find the smell of musk described as follows: "A very strong, diffusible, penetrating, persistent odour." With all these qualifying terms a student is as remote from knowing the exact smell as he was before. In the present Pharmacopœia the learned authors have tried to improve the description by saying that musk has "a very characteristic, penetrating, persistent odour." You will find a large number of similarly ambiguous descriptions of smells throughout the Pharmacopœia and other books dealing with subjects allied to medicine.

The layman generally describes a smell as a "stink" or a "scent," and a lady describes it as "horrid" or "lovely." The sense of smell may be normal, absent, intensified, deficient, or perverted. When normal I daresay it means the acuity of the sense of smell in the majority of persons. When absent we say they have "anosmia." This affliction has its advantages as it enables them to enjoy stale London eggs as if they were new laid. Some have too keen a perception of smell, or "hyperosmia." This is very marked in the blind. Isaac of old said to Jacob, "Thy smell is not the smell of Esau." I came across a gentleman who kept his pecacuanha powder in a remote corner of the dispensary, and he told me that if anyone removed the stopper he would at once perceive the smell and would have an attack of stomach-ache, and I had proof of the accuracy of his words.

The sense of smell is intensified by the administration of strychnine. In some cases we have a perversion of the sense of smell, "parosmia." This is of great clinical importance. A strange smell is often the aura in epilepsy and sometimes the precursor of insanity. There are some persons, if I may use the term, "smell-blind." A fellow student who afterwards did some chemistry with me for the D.P.H. used to gloat over the lovely (as he called it) perfume of bisulphide of carbon. He afterwards became one of the medical inspectors at the Local Government Board. The sense of smell is the function of the olfactory nerve which also distinguishes the various flavours, and this may be the reason why so many persons cannot distinguish smell from taste. The four primary tastes are sweet, bitter, acid, and salt, and these have no effect on the olfactory nerve; hence paralysis of this nerve does not delete the sweet, bitter, acid, or salty character of substance, but does of the flavouring agents. But paralysis of the glossopharyngeal and certain fibres of the fifth nerve destroys the sense of taste but not flavour. Some of the senses are very fully classified, vision and hearing in particular; probably these give the greater pleasure to the great majority. We have primary and secondary colours, and therefore to describe a colour as "horrid" would not be acceptable, although such passes muster for the smell. In the case of hearing, the classification is so complete that you can describe the musical notes from the grunt of the pig to the song of the nightingale.

Passing on to the classification of smells, some years ago, when

working specially in chemistry, I did bottle up some characteristic smells, and concocted a name for each. I do not recollect the details of that work, but it leaves an impression on me that some classification of smells ought to be possible. In the selection of odoriferous substances one recognises the importance of choosing pure definite chemical bodies so as to avoid mixed smells, and that they should be capable of ready dilution, as strong odours not only quickly temporarily paralyse the olfactory nerve endings but also irritate the fifth nerve. The concocted names of the primary odours should be easily adapted to affixes and prefixes. Having adopted the standard of odours and their names, I would suggest sets of them at the elementary schools to familiarise the children with them and their names, as is done at present in the case of colours. The foundation laid of an octave of smells it would not be so difficult as hitherto to impart more definitely and intelligently the character of a smell to others in legal and medical cases.

As a preliminary classification of the primary odours we might select such bodies as (1) ammonia; (2) sulphuretted hydrogen; (3) bromine; (4) valerianic acid; (5) ether; (6) menthol; (7) camphor; (8) artificial musk; (9) nitro-benzol. Next we have to concoct a name for each of these odours apart from the names of the substances, such as is done with colours. For example, *red* does not pertain to any particular substance, but is the quality of large numbers, and we can qualify the quality in various ways, such as reddish-yellow and reddish-brown, or yellowish-red and brownish-red.

After settling the primary odours and name we could, I think, in the same manner describe the odours fairly well of a larger number of substances.

I am, Sir, yours faithfully,

Nov. 22nd, 1909. MORRIS J. WILLIAMS.

### WANTED—A SIMPLE PURINOMETER.

A CORRESPONDENT wishes to hear of a simple inexpensive method and apparatus for estimating purins in urine. There is a process (given in Boston's "Clinical Diagnosis") which has a simple apparatus devised by Camerer, but he cannot find it in any instrument catalogue at his command. The only apparatus which he can find in the lists costs 25s. or 20s.

---

*G. R. I.* (Whalley Range).—The information contained in your legal correspondent's letter is correct. Anyone can notify a death and is at liberty to express an opinion of its cause, but no one but a registered medical practitioner can give a statutory death certificate.

**COMMUNICATIONS not noticed in our present issue will receive attention in our next.**

---

# Medical Diary for the ensuing Week.

## ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

TUESDAY.

MEDICAL SECTION: at 5.30 P.M.

*Joint Debate:*

On the Diagnosis and Treatment of Duodenal Ulcer, opened by Mr. B. G. A. Moynihan, followed by Sir T. Lauder Brunton, Bart., Mr. Herbert Waterhouse, Dr. W. Hale White, Dr. A. F. Hertz, Dr. R. Hutchison, and others.

THURSDAY.

DERMATOLOGICAL SECTION (Hon. Secretaries—E. G. Graham Little, H. G. Adamson): at 5 P.M.

*Cases and Specimens:*

Dr. T. D. Savill: Sclerodermia.
Dr. George Pernet: Sections of Melanosis Cutis.
Mr. J. MacDonagh: Trichoepithelioma Papulosum.
Dr. Graham Little: (1) Telangiectatic Lupus Erythematosus; (2) Tertiary Syphilis.
Mr. G. W. Dawson: (1) Acne Keloid; (2) Bazin's Disease: (3) Case for Diagnosis.

FRIDAY.

ELECTRO-THERAPEUTICAL SECTION (Hon. Secretaries—Reginald Morton, G. Harrison Orton): at 8.30 P.M.

*Paper:*

Dr. N. S. Finzi: Radium in the Treatment of Malignant Growths.

---

**MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.**

MONDAY.—8.30 P.M., Prof. A. Keith: Recent Researches on the Anatomy of the Heart.—Dr. T. Lewis: Auricular Fibrillation.

**PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury-square, W.C.**

TUESDAY.—8 P.M., Mr. C. E. Sage: The Fixed Vegetable Oils of the British Pharmacopœia (particularly with regard to the Methods of their Production) (illustrated by lantern slides).

**SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.**

FRIDAY.—8.30 P.M., Discussion on Tick Fever (opened by Sir William Leishman).—Paper read for Dr. A. Balfour (Khartoum) and Captain D. Thomson, R.A.M.C. (Khartoum): Two Cases of Non-ulcerating Oriental Sore, better termed "Leishman Nodules" (with photograph).

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.**

MONDAY, WEDNESDAY, AND FRIDAY.—5 P.M., Dr. G. E. Smith: The Evolution of the Brain. (Arris and Gale Lectures).

**MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.**

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Dr. F. Powell: Some Diseases of the Larynx, with Special Reference to Hoarseness and Loss of Voice.

TUESDAY.—4 P.M., Dr. W. Ewart: Clinique (Medical). 5.15 P.M., Lecture:—Dr. P. Kidd: Some Points in the Clinical History of Pneumonia.

WEDNESDAY.—4 P.M., Mr. T. H. Openshaw: Clinique (Surgical). 5.15 P.M., Dr. E. I. Spriggs: The Physiology of the Appetite, with Special Reference to the Arrangement of Meals and the Use of Tonics.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. R. Hutchison: Some Conditions which Simulate Dyspepsia.

FRIDAY.—4 P.M., Dr. StClair Thomson: Clinique (Throat).

**POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.**

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Armour: Practical Surgery.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. R. Morton: X Ray Department.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. B. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Mr. Pardoe: Bacterial Infections of the Urinary Organs.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Mr. Dunn: Purulent Conjunctivitis.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases in the Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Etherington-Smith: Clinical.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Mr. B. Harman: Diseases of the Eyes. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations.

**LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.**

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 3.15 P.M., Special Lecture:—Sir Dyce Duckworth: On the Diatheses.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 3.15 P.M., Special Lecture:—Sir William Bennett: The Use of the Thermo-cautery in Surgery.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. Rose Bradford: Nephritis.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

**NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.**

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans), 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson). 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G Auld). 2.30 P.M., Operations. Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles).

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out patient (Dr. T. R. Whipham); Skin (Dr G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Dr. H. Pirie). 4.30 P.M., Lecture:—Dr. A. H. Pirie —The Treatment of Ringworm by X Rays.

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Dr. T. R. Whipham: Idiocy and Allied Conditions in Children.

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R M. Leslie).

**HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.**

THURSDAY.—4 P.M., Lecture (Medical):—Dr. Still: Epilepsy.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

MONDAY.—4 P.M., Lecture: Sir Victor Horsley: Surgical Diagnosis and Treatment of Diseases of the Nervous System.
TUESDAY.—3.30 P.M., Clinical Lecture. Sir William Gowers.
FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. T. G. Stewart: Hysterical Paralysis.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

THURSDAY.—4.30 P.M., Clinical Lecture:—Dr. A. Wylie: Nasal and Aural Hæmorrhage.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.
TUESDAY.—5 P.M., Clinical Demonstration:—Dr. J. Mackenzie.
WEDNESDAY.—3 P.M., Clinical Demonstration:—Dr. F. Palmer.
THURSDAY.—3 P.M., Clinical Demonstration:—Dr. T. D. Savill.
FRIDAY.—2 P.M., Clinical Demonstration:—Dr. P. Stewart. 5.30 P.M., Clinical Demonstration: Dr. E. Macnamara.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Ul-erythema: I., Centrifugum; II., Telangiectatic; III., Ophryogenes.

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (13th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

**TUESDAY (14th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

**WEDNESDAY (15th).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

**THURSDAY (16th).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, (9 A.M., Major, 2 P.M.).

**FRIDAY (17th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor 9 A.M., Major, 2 P.M.).

**SATURDAY (18th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

## EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

*It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.*

*Lectures, original articles, and reports should be written on one side of the paper only,* AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

*Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.*

*We cannot prescribe or recommend practitioners.*

*Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."*

*Letters relating to the publication, sale and advertising departments of* THE LANCET *should be addressed "To the Manager."*

*We cannot undertake to return MSS. not used.*

## MANAGER'S NOTICES.

### TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

Until the end of the present year copies sent by post will be charged at the rate of 7½*d.* inland and 8*d.* abroad.

Commencing with the issue of Jan. 1st, 1910, the rates of subscriptions, post free from THE LANCET Offices, will be:—

| FOR THE UNITED KINGDOM. | | TO THE COLONIES AND ABROAD. | |
|---|---|---|---|
| One Year ... ... ... | £1 1 0 | One Year ... ... ... | £1 5 0 |
| Six Months ... ... ... | 0 12 6 | Six Months ... ... ... | 0 14 0 |
| Three Months ... ... | 0 6 6 | Three Months ... ... | 0 7 0 |

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rate of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

### TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at these rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, Dec. 9th, 1909.

| Date. | | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dec. | 3 | 28·71 | W. | 0·37 | 77 | 46 | 42 | 39 | 43 | Cloudy |
| ,, | 4 | 28·75 | S.W. | 0·09 | 57 | 46 | 39 | 39 | 40 | Raining |
| ,, | 5 | 29·16 | W. | 0·25 | 55 | 44 | 33 | 33 | 34 | Fine |
| ,, | 6 | 29·05 | S.W. | 0·12 | 55 | 43 | 34 | 38 | 39 | Overcast |
| ,, | 7 | 29·22 | S.W. | 0·02 | 41 | 40 | 35 | 37 | 37 | Overcast |
| ,, | 8 | 29·86 | N.W. | 0·01 | 51 | 42 | 35 | 34 | 35 | Fine |
| ,, | 9 | 30·36 | W. | ... | 44 | 39 | 32 | 32 | 33 | Foggy |

## Communications, Letters, &c., have been received from—

A.—Mr. J. Astier, Asnières; Messrs. Anderson and Co., Lond.; Sir William Allchin, Plaxtol; Ardath Tobacco Co., Lond.; Messrs. D. Appleton and Co., Lond.; Dr. T. R. Atkinson, Chadwell Heath.

B.—Dr. J. S. Baird, Eglinton; Mr. Haydn Brown, Caterham; Messrs. Burroughs, Wellcome, and Co., Lond.; Messrs. Bayliss, Jones, and Bayliss, Wolverhampton; Mr. Douglas Bryan, Leicester; Messrs. Bates, Hendy, and Co., Lond.; Mr. E. Baker, Birmingham; Mr. W. Braumüller, Vienna; Buvo, Ltd., Lond., Manager of; Mr. G. P. Butcher, Plymouth; British White Cross Milk Co., Lond.; Bernard Beer Co., Lond.; Mr. W. W. Brown, Eastbourne; Messrs. Blundell and Rigby, Lond.

C.—Mr. F. R. Cross, Clifton; Mr. J. Crowley, Ballycastle; Messrs. Crossley and Co., Lond.; Messrs. Cadbury Bros., Bournville; Messrs. Casein, Lond.; Cardiff Infirmary, Secretary of; Mr. P. Crawford Cowran, Lond.; A Consumer; Mr. Cuthbert E. A. Clayton, Manchester; Messrs. A. H. Cox and Co., Brighton; Central London Throat and Ear Hospital, Secretary of; Miss F. M. Cunningham, Ping Yin; Messrs. A. Constable and Co., Lond.; Dr. Carey Coombs, Clifton; Messrs. T. and T. Clark, Edinburgh; Mr. F. W. Clarke, Chorlton-cum-Hardy.

D.—Derbyshire Royal Infirmary, Derby, Secretary of; Messrs. F. Davidson and Co., Lond.

E.—Mr. H. Elliot-Blake, Bognor; Dr. Robert Edwards, Nunney; Messrs. Evans, Sons, Lescher, and Webb, Lond.

F.—Dr. John Fletcher, Lond.; Messrs. J. S. Fry and Sons, Bristol; Mr. S. Fisher, Lond.; Messrs. Findlater, Mackie, Todd, and Co., Lond.; Messrs. Fannin and Co., Dublin.

G.—Messrs. Gale and Co., Lond.; Gt. Eastern Railway Co., Lond., Continental Traffic Manager of; Messrs. Giddy and Giddy, Lond.; Mr. E. S. Gunn, Croydon; Grimsby and District Hospital, Secretary of; Dr. Michele Granata, Riposto, Italy.

H.—Dr. J. E. Hett, Berlin, Ontario; Hants County Asylum, Fareham, Clerk to the; Mr. J. Hatton, Bath; Hoffmann La Roche Chemical Works, Lond.; Mr. T. H. Hewitt, Lond.

I.—India Rubber, Gutta Percha and Telegraph Works Co., Lond.; The Isham Water Co., Lond.

J.—Dr. J. K. Jamieson, Leeds; J. D. M.

K.—Mr. G. Keen, Barcelona; Messrs. Kutnow and Co., Lond.; Kingsley and Thackeray Hotels, Lond., Secretary of; Kumbakonam Municipal Council, India, Chairman of; Messrs. R. A. Knight and Co., Lond.

L.—Mr. H. K. Lewis, Lond.; Dr. A. Lewthwaite, Thirlmere, New South Wales; Dr. G. M. Lowe, Ryde; *Local Government Review*, Lond., Editor of; La Réclame Universelle, Paris; Messrs. Lumley and Co., Lond.; Liverpool Lint Co., Secretary of; Colonel F. J. Lambkin, R.A.M.C., Lond.; Messrs. E. and A. Levetus and Co., Lond.

M.—Dr. W. H. Morley, Detroit; Dr. A. Maude, Westerham; Mr. R. D. Macgregor, Lond.; Messrs. E. S. Mittler und Sohn, Berlin; Maltine Manufacturing Co., Lond.; Medical Supply Association, Lond.; Medical Graduates' College and Polyclinic, Lond.; Messrs. C. Mitchell and Co., Lond.; Mr. W. Martindale, Lond.; Morgan Co. Medical Society, Jacksonville, Treasurer to the; Messrs. McKesson and Robbins, New York; Dr. E. Michels, Lond.; Manchester Northern Hospital for Women and Children, Secretary of; Moral Orthopædist; Miol Manufacturing Co., Lond.; Messrs. Maclehose and Sons, Glasgow; Messrs. Macphersons, Lond.

N.—Mr. Michael Naggiar, Lond.; Nordrach-on-Dee Sanatorium, Banchory, Secretary of; *New York Medical Journal*, Assistant Editor of; Messrs. F. Newbery and Sons, Lond.; Northampton General Hospital, Secretary of; Surgeon-Major E. F. Nelson, Downpatrick; Newark-on-Trent Hospital and Dispensary, Secretary of; Mr. J. C. Needes, Lond.; Mr. H. Needes, Lond.

O.—Dr. J. M. O'Meara, Luton; Odol Chemical Works Co., Lond.; Dr. M. Orb, St. Anne's Hill, Co. Cork; Messrs. Oppenheimer, Son, and Co., Lond.; Oxford Medical Publications, Lond., Editor of; Mr. Edmund Owen, Lond.

P.—Dr. P. R. Parkinson, Lond.; Mr. J. B. Pike, Loughborough; Dr. F. J. Poynton, Lond.; Messrs. Paine and Co., St. Neots; Messrs. Phillips Bros., Lond.; Price's Patent Candle Co., Lond., Secretary of; Mr. J Herbert Parsons, Lond.; Messrs. Peacock and Hadley, Lond.

Q.—Queen Charlotte's Lying-in Hospital, Lond., Secretary of.

R.—Mr. C. T. Rule, Lond.; Messrs. Reynolds and Branson, Leeds; Royal Microscopical Society, Lond., Secretaries of; Dr. W. G. Aitchison Robertson, Edinburgh; Messrs. Rebman, Lond.; Messrs. Rissicol, Lond.; Messrs. Reitmeyer and Co., Lond.; The J. D. Riedel Co., Lond.; Royal Institute of Public Health, Lond., Assistant Secretary of; R. M.; Dr. R. R. Rentoul, Liverpool.

S.—Dr. Robert Sinclair, Dundee; Sheffield Union, Clerk to the; Messrs. G. Street and Co., Lond.; Salutaris Water Co., Lond.; Messrs. Smith and Hardy, Lond.; Mr. C. F. Scripps, Lond.; Sheffield Children's Hospital, Secretary of East End Branch; Mr. A. Stuber, Würzburg; Surgical Aid Society, Lond., Secretary of; Mr. J. C. Sale, Skegness; Dr. J. Snowman, Lond.; Professor G. Elliot Smith, Manchester; Dr. Thomas Strain, Lond.; Dr. J. A. Struthers, Birkenhead; Scholastic, Clerical, &c., Association, Lond.

T.—The Thresh Disinfector Co., Lond., Managing Director of; Mr G. Grey Turner, Newcastle-on-Tyne; T. C.

U.—Mr. T. Fisher Unwin, Lond.; University of Durham College of Medicine, Newcastle-on-Tyne, Secretary of.

V.—Messrs. Van Houten, Lond.; Mr. J. Voet, Lond.

W.—Mr. J. R. Wildman, Lond.; Messrs. Wills, Lond.; Messrs. A. J. Wilson and Co., Lond.; West Bromwich District Hospital, Secretary of; Messrs. John Wiley and Sons, New York; Dr. Chalmers Watson, Edinburgh; Dr. J. J. Wallace, Hastings; Messrs. J. Wright and Sons, Bristol; Wolverhampton General Hospital, Secretary of; West London Hospital, &c., Dean of; West Ham Hospital, Lond., Secretary of; The Women's Aërial League, Lond.

## Letters, each with enclosure, are also acknowledged from—

A.—Messrs. Allen and Hanburys, Lond.; Apollinaris Co., Lond.; Army and Navy Male Nurses' Co-operation, Lond., Secretary of; Dr. W. Attlee, Eton; A. C.

B.—Dr. J. H. Bendle, Bath; Mr. F. J. Breakell, Preston; Mr. J. Bland-Sutton, Lond.; Bristol Myers Co., Brooklyn; Blackburn and East Lancashire Infirmary, Secretary of.

C.—Mr. H. Cross, Toddington; Messrs. Chaplin and Co., Lond.; Dr. H. W. Crowe, Yelverton; C. D.; Mr. A. Curry, Lond.; Cheadle Royal, Manchester, Secretary of; C. E. T.; C. J. M.

D.—Dr. D. Douglas, Bellshill; Mr. U. K. Dutt, Cambridge; Messrs. W. Dawson and Sons, Lond.; Dr. C. Dukes, Rugby; Mr. A. Deschine, Moscow.

E.—Mr. E. Evans, Felinfach; Messrs. Elgood and Co., Lond.; Dr. E.; E. F. W.

F.—Mr. W. Foreman, Liverpool; Dr. J. M. Fortún, Remedios, Cuba; Dr. L. Findlay, Glasgow; Mrs. Ferguson, Barnet; F. W. M.

G.—Dr. Stanley Gill, Formby; Mr. H. J. Glaisher, Lond.

H.—Dr. G. Hulme, Felixstowe; Messrs. C. Hearson and Co., Lond.; H. G. S.; Fleet-Surgeon W. E. Home, R.N., Bristol; Mr. A. J. Harmer, Lond.; Mr. R. T. Harrison, Grahamstown; Messrs. J. F. Hartz Co., Toronto; Dr. G. E. Halstead, Ramsgate; Messrs. J. Haddon and Co., Lond.; Messrs. Haasenstein and Vogler, Geneva.

J.—J. A. F.; J. W. B.; J. H.

L.—Leyton, Walthamstow, &c., Children's Hospital, Secretary of; Lister Institute of Preventive Medicine, Lond., Director of.

M.—Dr. A. H. Miller, Cambridge; Mr. E. Merck, Lond.; Dr. M.; Medicus, Toddington; Messrs. McDougall Bros., Manchester; Dr. J. W. Miller, Hereford; Mr. J. May, Lond.; Messrs. H. Müller and Co., Lond.; Mr. D. Maguire, Templeboy; Dr. W. F. Macdonogh, Twickenham; Dr. Menzies, Cambridge; Messrs. Masson et Cie, Paris.

N.—Nottingham Guardians, Clerk to the.

O.—Mr. C. A. P. Osburne, Old Catton.

P.—Dr. T. Wilson Parry, Lond.; Mr. W. G. T. Posnett, Reading; Messrs. Patterson and Sons, Liverpool; Miss P.; Dr. P.; Mr. T. A. Poirotte, Lond.

R.—Mr. J. D. Reid, Lytham; Royal Alexandra Hospital for Sick Children, Brighton, Secretary of; Messrs. Ross, Lond.; Royal Southern Hospital, Liverpool, Secretary of; R. D.; Mr. H. G. Robinson, Edinburgh.

S.—Dr. G. H. Sieveking, Hamburg; Mr. G. Steinheil, Paris; S. F. M.; Messrs. Spiers and Pond, Lond.; Smith's Advertising Agency, Lond.; S. M. M.; Staff-Surgeon L. Lindop, R.N., Devonport; Dr. C. Sanders, Lond.; Surgeon, Liverpool.

T.—Mr. J. Thin, Edinburgh; Telephone Instalment System Co., Lond.

W.—Westminster Hospital Medical School, Lond., Secretary of; Messrs Wyman and Sons, Lond.; Mrs. Wetherall, Much Hadham; W. H.; W. F. M.; W. G. M.; Mr. V. Whitgreave, Penzance; Dr. H. W. Webster, Ventnor; Mr. J. Wanamaker, Paris.

Y.—Dr. J. Young, Bearsden; Dr. E. Young, Lond.

Z.—Messrs. C. Zimmermann and Co., Lond.

EVERY FRIDAY.

# THE LANCET.

PRICE SEVENPENCE.

## SUBSCRIPTION, POST FREE.

Commencing with the New Year, the price of THE LANCET will be reduced to 6*d.*; and the Subscription Rate will be:—United Kingdom: 12 months, 21*s.*; 6 months, 12*s.* 6*d.*; 3 months, 6*s.* 6*d.* Colonies and Abroad: 12 months, 25*s.*; 6 months, 14*s.*; 3 months, 7*s.*

Subscriptions (which may commence at any time) are payable in advance.

## ADVERTISING.

| | | |
|---|---|---|
| Books and Publications ... | Seven Lines and under | £0 5 0 |
| Official and General Announcements | Ditto | 0 5 0 |
| Trade and Miscellaneous Advertisements and Situations Vacant ... ... | Ditto | 0 4 6 |
| | Every additional Line | 0 0 6 |

Situations wanted: First 30 words, 2*s.* 6*d.*; per additional 8 words, 6*d.*
Quarter Page, £1 10*s.* Half a Page, £2 15*s.* An Entire Page, £5 5*s.*

An original and novel feature of "THE LANCET General Advertiser," is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

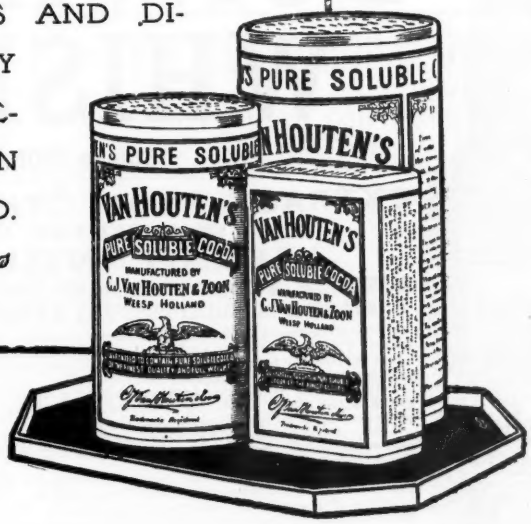
**Agent for the Advertisement Department in France—J. ASTIER, 35, Rue Franklin, Asnières, Paris.**

# RELIABILITY

IS, TO THE MEDICAL MAN, AN INDISPENSABLE CHARACTERISTIC IN THE ARTICLES HE RECOMMENDS

**VAN HOUTEN'S COCOA**

HAS BEHIND IT NEARLY A CENTURY'S REPUTATION AS THE STANDARD OF QUALITY AND PURITY. IN POINT OF SOLUBILITY, LIGHTNESS AND DIGESTIBILITY IT HAS NEVER BEEN EQUALLED.



# "APENTA"

## THE BEST NATURAL APERIENT WATER.

"My observations have proved that **APENTA WATER** is an **excellent, very active purgative,** and of **strictly constant composition.** Its action is **mild** and **reliable,** and a wineglassful **acts** as an **aperient without producing either griping or discomfort.** It is the Water **specially suited** for the **treatment of habitual constipation.** Moreover, by its special and constant composition this Water **appears to me to merit a place by itself in the therapeutics of Mineral Waters."**

PARIS, 4th February, 1899.

DR. E. LANCEREAUX,
*Professeur à la Faculté de Médecine, Paris; Médecin honoraire des Hôpitaux; President de l'Académie de Médecine.*

*Sole Importers:* **THE APOLLINARIS COMPANY, Limited, LONDON.**

# DUNVILLE'S WHISKY.

**1808 to 1908.**

## EXTRACT FROM "THE LANCET"

*8th FEBRUARY, 1908.*

## IRISH WHISKY.

**DUNVILLE & CO., ROYAL IRISH DISTILLERIES, BELFAST, and 239 & 241, SHAFTESBURY AVENUE, LONDON, W.C.**

"Two specimens of Irish Whisk were submitted to us, one distinguished by the letters 'V.R.' and the other by the title of 'Special Liqueur.' Analysis readily discriminated the two, the former being a blend of pot-still and patent-still spirit and the latter principally a pure pot-still spirit.

"The 'V.R.' Whisky, for example, showed a relatively small proportion of secondary products, the ethers amounting to 26, the higher alcohols to 107, and the furfural to 0·3 parts per 100,000 parts of absolute alcohol present.

"On the other hand, the specimen marked 'Special Liqueur' yielded on analysis one part of furfural, 65 parts ethers, and 400 parts of higher alcohols in 100,000 parts of absolute alcohol present.

"It will be noticed that the amount of furfural is relatively low having regard to the fact that the spirit is principally distilled in a pot-still. Doubtless this is due to the careful selection of a particular 'running' from the still. **Since furfural is held to be a poisonous constituent of whisky this fact may be regarded as satisfactory from a dietetic point of view.**

"Both spirits evidently belong to the class of whisky described as **'thoroughly matured.'** Those who know the peculiar characteristics of **genuine Irish Whisky** will appreciate the flavour in particular of the 'Special Liqueur.'

"The specimens were entirely free from acrid flavour, and were **peculiarly smooth to the palate.** They were, moreover, free from excess of extractive matters, and exhibited practically no acidity."

*Examined, Passed and Exhibited by the INSTITUTE OF HYGIENE at 34, Devonshire-street, Harley-street, London, W., where it can be seen and its merit explained.*

*"Worthy of your wonder."*
Wordsworth.

THE

# "CIVIC" PIPE

## A Triumph in Pipe Making

THE Construction of this Pipe has Simplicity as its Principle and Value as its Keynote. Manufactured from the Finest Grain Briar. Solid Silver turned-edge Mounts. Special Quality Para Vulcanite Mouthpieces. Perfectly Constructed Oval Bore

**2/6 Each**

**MADE IN 36 UNIQUE MODELS**
**Obtainable from all Tobacconists and Stores**

Write for Illustrated Booklet which will be sent post free on request showing complete set of models

Dept. 14. The Imperial Tobacco Co., Ltd.
Hammersmith, London, W. c3

THE
BRITISH DIAMALT COMPY'S
PURE AND HIGHLY DIASTATIC
Extract of Malt,
Registered as
DIAMALT
January 11th, 1909.
The following table gives the results of analyses by Mr E. F. Harrison, B.Sc. (Lond.) Ph.C., F.I.C., F.C.S., of the principal Brands of Malt Extracts on the market.
The figures given indicate the Diastatic Value and Strength.
DIAMALT - 1392
Other Extracts—
No. 1 ... 920
" 2 ... 723
" 3 ... 681
" 4 ... 601
" 5 ... 408
" 6 ... 384
" 7 ... 245
No. 8 ... 243
" 9 ... 170
" 10 ... 88
" 11 ... 83
" 12 ... 0
" 13 ... 0
" 14 ...
ARE GUARANTEED TO BE OF THE SAME QUALITY AS

# "THE" MALT EXTRACT

## THE BRITISH MEDICAL JOURNAL

***Oct. 16th, 1909.***

### DIAMALT WITH COD LIVER OIL.

We have received from the British Diamalt Co., 11 & 13, Southwark Street, London, S.E., samples of two combinations of malt extract with cod liver oil, which they have recently put upon the market. These are stated to consist of cod liver oil and malt extract only, with neither flavouring ingredients nor preservatives, and to contain respectively 15% and 33⅓% by weight of the oil, or, approximately, 20% and 42% by measure.

Our analyses of the two samples gave the following results:

| | No. 1. | No. 2. |
|---|---|---|
| Cod Liver Oil ... ... ... ... | 15·3% | 33·6% |
| Maltose ... ... ... ... ... | 59·6% | 57·9% |
| Diastatic power of the extract, in terms of the B.P.C. test ... ... | 671 | 455 |

Notwithstanding the large proportion of oil present, its taste was most effectually disguised by the malt extract, and both preparations were very palatable.

The absence of aromatic essential oils, such as are sometimes used to mask the flavour of the oil, must also be regarded as an advantage.

Both samples were of quite thin consistence, and should be acceptable even to those who find viscosity and stickiness as repellant as the undisguised taste of cod liver oil. Either of them readily forms a milky emulsion when shaken up with water.

***Samples Free to the Medical Profession.***

**THE BRITISH DIAMALT CO.,** 11 & 13, SOUTHWARK ST., LONDON, S.E.

# HUMANIZED MILK

Best and most reliable, being prepared from Perfectly Fresh Milk, produced on own Dairy Farms.

Prepared in 3 Strengths

## "FACSIMILE HUMAN MILK"

Analogous with and corresponding to the Best Mother's Milk.

## "MODIFIED" HUMANIZED MILK

With a minimum percentage of casein or curd. For very young and delicate infants.

## "CONCENTRATED" HUMANIZED MILK

Double strength. Compact and handy for Rail transit. To be diluted with equal quantity of boiled water.

## ASSES' MILK

From our own herd of Milch Asses. Delivered to any part of Kingdom.

Orders and Communications to— **WELFORD & SONS, LIMITED.**

Chief Offices and Milk Laboratories : : : : : ELGIN AVENUE, LONDON, W.

Principal Telephone: "Paddington 5440" (2 Lines), Telegraphic Address: "Welford's, London."

# DR. J. COLLIS BROWNE'S CHLORODYNE.

**The Original and only Genuine.**

ORIGINAL AND

ONLY GENUINE.

VICE-CHANCELLOR WOOD stated that DR. J. COLLIS BROWNE was undoubtedly the inventor of Chlorodyne, that the whole story of the Defendant was deliberately untrue.

LORD CHANCELLOR SELBORNE and LORD JUSTICE JAMES stated that the Defendant had made a deliberate misrepresentation of the decision of Vice-Chancellor Wood.

Chemists throughout the land will confirm this decision that Dr. J. C. BROWNE was the inventor of Chlorodyne.

The Editor of the *Medical Times*, in his report on Chlorodyne, January 13th, 1866, gives information that the Chlorodyne referred to was the medicine introduced by a retired Army Medical Officer, which was Dr. J. COLLIS BROWNE; still this is published by the Defendant as testimony to his medicine.

Numerous affidavits from eminent Physicians and others were produced in Court, stating that Dr. J. COLLIS BROWNE was the inventor of Chlorodyne, and that when prescribing they mean no other.

**CAUTION.**—It is now incumbent on all who purchase Chlorodyne to see that the name "DR. J. COLLIS BROWNE'S CHLORODYNE" is engraved on the Government stamp, as it is not sold otherwise. All other compounds under the name of Chlorodyne are spurious. All attempts at analysis have failed, thence the statement that the constituents of Chlorodyne are known is a misrepresentation.

*After these public statements in a Court of Equity, and subsequent confirmation by the trade at large, no Chemist can conscientiously use or sell any other compound for Chlorodyne without committing a breach of faith, unjust to patient and physician.* The value of the remedy *alone* creates the great demand.

**Sold in Bottles—1s. 1½d., 2s. 9d., 4s. 6d., and 11s.** **Usual Discount to the Profession.**

*Sole Manufacturers:* **J. T. DAVENPORT, LTD., LONDON.**

*Telegrams:* "ALLENBURYS, LONDON."

*Telephones:* Lombard Street—2954 (two lines) AVENUE. Bethnal Green—5023 (three lines) LONDON WALL.

On Sundays, Holidays, and after 6 p.m. *Telegrams:* "VEREBURYS, LONDON." *Telephone:* 628 PADDINGTON.

# The Lister Institute
## OF PREVENTIVE MEDICINE

### Antitoxins, Vaccines, etc.

| | |
|---|---|
| Diphtheria Antitoxin, 4,000 units | 5/- |
| " higher potency, 4,000 units | 10/- |
| Tetanus Antitoxin, 30 c.c. | 12/- |
| Anti-Streptococcic Serum, 30 c.c. | 7/6 |
| Anti-Dysentery Serum, 20 c.c. | 5/- |
| Normal Serum (Horse), 10 c.c. | 1/- |
| Yersin's Serum, 20 c.c. | 6/6 |
| Anti-Meningococcic Serum, 30 c.c. | 7/6 |
| Coley's Fluid (New), 2 c.c. | 5/- |
| Haffkine's Prophylactic, 20 c.c. | 6/- |
| Anti-Staphylococcic Vaccines, ½ c.c. 1/-; 1 c.c. 1/6; 2 c.c. | 2/6 |
| Anti-Gonococcic Vaccine, ½ c.c. | 2/6 |
| Anti-Streptococcic Vaccine, ½ c.c. 1/-; 1 c.c. 1/6; 2 c.c. | 2/6 |
| Anti-Pneumococcic Vaccine, ½ c.c. 2/-; 1 c.c. 3/-; 2 c.c. | 5/- |
| Anti-Cholera Vaccine (Kolle), 1 c.c. 2/-; 5 c.c. | 5/- |
| Anti-Typhoid Vaccine, 1 c.c. | 1/6 |
| Tubercle Bacilli for Opsonin Testing | 5/- |
| Calf Vaccine Lymph, 1 vaccination | 6d. |
| " " " per dozen tubes | 5/- |

### FOR VETERINARY USE.

| | |
|---|---|
| Tuberculin, 3 c.c. | 1/- |
| Mallein, 3 c.c. | 1/- |
| Anti-Tetanus Serum, 10 c.c. | 3/- |

*SOLE WHOLESALE AGENTS:*

## ALLEN & HANBURYS Ltd., 37, LOMBARD STREET, LONDON.

*Of all Chemists, or through the following Provincial Depôts:*

ABERDEEN—Davidson & Kay.
BRISTOL—Ferris & Co.
BELFAST—McMullan & Co.
" Grattan & Co., Ltd.
BIRMINGHAM—Southall Bros. & Barclay.
BOURNEMOUTH—G. E. Bridge & Co.
CAMBRIDGE—Church & Son.
CARDIFF—Jesse Williams & Co.
CORK—Kiloh & Co., Ltd.
DUBLIN—Fannin & Co., Ltd.
EDINBURGH—Duncan Flockhart & Co.
GLASGOW—Glasgow Apothecaries' Co.
ISLE OF WIGHT—W. T. Deeks, Shanklin.
JERSEY—J. T. Baker.
LEEDS—Reynolds & Branson, Ltd.
LIVERPOOL—Clay & Abraham.
NEWCASTLE—Isaac & Son.
NORWICH—Smith & Sons.
NOTTINGHAM—C. A. Bolton.
MANCHESTER—Woolley, Sons & Co., Ltd.
OXFORD—Cousins, Thomas & Co.
PLYMOUTH—Martin & Palmer.
SHEFFIELD—C. T. W. Newsholme.
YORK—Raimes & Co.

## MODERN THERAPEUTICAL AGENTS
OF THE
**FARBWERKE vorm. MEISTER, LUCIUS & BRÜNING, Hoechst-on-Main, Germany.**

### ANÆSTHESIN
**Local ANÆSTHETIC with reliable long-continued action. Absolutely non-toxic and non-irritant.**

### ARGONIN
**Approved Antigonorrhoic, especially in cases accompanied by severe inflammation.**

### SYNTH. SUPRARENIN
**The active adrenal substance built up by chemical synthesis.**

### MIGRAININE
**ANTINEURALGIC, ANALEPTIC, ANTIPYRETIC. Has proved an excellent remedy in severest cases of Migraine.**

### DERMATOL
**Antiseptic, Astringent, Desiccative.**

### SODIUM DIETHYLBARBITURATE.
**Easily Soluble Hypnotic ("Hoechst")**
**SAFE, PROMPT, and RELIABLE.**
**For Internal, Rectal, and Subcutaneous application.**

**For Samples, Literature, and copy of the "Compendium of Modern Therapeutical Agents"**
APPLY TO
**MEISTER, LUCIUS & BRÜNING LTD., 51, St. Mary Axe, London, E.C.**

# LACTOBACILLINE MILK

**is the *only* preparation of soured or curdled milk manufactured under the patronage and scientific supervision of Prof. METCHNIKOFF.**

***CAUTION.***—*The Medical Profession is warned against soured milk preparations which may be harmful and positively dangerous.*

LACTOBACILLINE MILK is prepared in the United Kingdom only by the

**LONDON PURE MILK ASSOCIATION, Ltd., 2, Halkin Place, Belgrave Sq.,**

Telegrams: "PUMILA, LONDON."] **LONDON, S.W.** [Telephone: 334 GERRARD.

*under an exclusive contract with the Société "Le Ferment" of Paris,*

**SOLE PURVEYORS TO PROFESSOR METCHNIKOFF.**

# FORMITROL

A remedy against infectious diseases of the mouth and throat (pseudo-membranous angina), chronic and acute pharyngitis, diphtheria, scarlatina, follicular tonsillitis, measles, thrush, inflammation of the gums, &c. A safe and pleasant form for the **internal administration of formaldehyde,** of which each pastille contains one centigramme (about $\frac{1}{6}$ grain). FORMITROL, absolutely harmless, is an anti-pyretic, and can be recommended as a **PROPHYLACTIC** in case of epidemics. Unequalled by any similar article on the market.

**PRICE:—5/6 per doz. Tubes of 30 Pastilles each, 4/- per lb. in bulk; or in small Tubes containing 10 Pastilles (unlabelled) for dispensing, 2/6 per dozen.**

***SAMPLES TO MEDICAL MEN ON APPLICATION.***

When prescribing specify "**FORMITROL WANDER.**"

**A. WANDER, PH.D.,** MANUFACTURING CHEMIST, & 3, Leonard St., City Road, LONDON, E.C.

KNOLL & CO. 8, Harp Lane, London, E.C.

# BROMURAL-KNOLL

*a-Monobromisovalerianylurea*

**For soothing the nerves and inducing sleep**

According to eminent authorities Bromural possesses a very powerful sedative action; it is also a harmless hypnotic in all cases of nervous sleeplessness. Bromural can even be given to children and in cases of heart disease. Dose:—As a sedative, 5 grains several times a day; as a hypnotic, 10 grains before bed time, in tabs. or powder.

# SCHERING'S MEDINAL

EASILY SOLUBLE HYPNOTIC

**For Internal, Rectal, and Subcutaneous Application.**

*MOST RELIABLE, SAFE, AND PROMPT.*

*Vide* the article of Dr. ERNST STEINITZ, the Municipal Hospital, "Moabit," Berlin (Prof. G. Klemperer's Ward), "Therapeutic Use of Soluble Hypnotics of the Veronal Group."

**SOLD IN POWDER AS WELL AS TABLET FORM.**

**Doses:—5—7½—15 grs. in a wineglassful of water or sweet wine, 3 to 4 hours after last meal.**

***For full particulars and Free Samples please apply to***

**A. & M. Zimmermann, 3, Lloyd's Avenue, London, E.C.**

# Phthisis
# In All Its Stages.

One of the most forcible reasons for the use of Angier's Emulsion in pulmonary tuberculosis is that this remedy enables the sensitive, rebellious stomach to retain, digest, and assimilate sufficient quantities of nourishing food. Because of this fact, it is a superlative nutritive tonic. Angier's Emulsion fortifies disease-resisting powers by maintaining normal nutrition. It supplants tissue waste by tissue reconstruction. It reduces the symptoms of systemic infection and exhaustion, hectic fever, night sweats, headache and diarrhœa. Angier's Emulsion is remarkably well borne by sensitive stomachs, and can be administered without fear of disturbing appetite or digestion—it assists them.

**FREE SAMPLES TO THE MEDICAL PROFESSION.**

## ANGIER'S EMULSION

**(Petroleum with Hypophosphites).**

**THE ANGIER CHEMICAL CO., Ltd., 86 Clerkenwell Road, London, E.C.**

Regeneration by the Natural Mineral Water of

## CONTREXÉVILLE (France)
## SOURCE DU PAVILLON

FRANCO BRITISH EXHIBITION LONDON 1908
**GRAND PRIZE**
THE HIGHEST DISTINCTION
to any mineral water in the Vosges (France)

**BEFORE AND AT MEALS**

**MOST EFFECTIVE in :**

## GOUT, GRAVEL, ARTHRITIS
## RHEUMATISM

*Samples free to Members of the Medical Profession on application*
to INGRAM & ROYLE, East Paul's Wharf, 26 Upper Thames St., LONDON E.C.

## RELIABLE, SAFE HYPNOSIS

often becomes one of the most important objects of medicinal treatment. Sleep is literally a tonic, of which sufficient doses must be taken or the whole organism suffers. For over thirty years no hypnotic has enjoyed greater and more justifiable confidence than

# BROMIDIA

The well recognized advantages of this product come from the **quality of its ingredients, its absolute purity, constant uniformity, remarkable therapeutic efficiency,** and **non-secrecy.**

In indicated dosage, Bromidia is unrivalled as a safe and reliable hypnotic.

**BATTLE & COMPANY**

(**PARIS** ST. LOUIS LONDON

# Eczema.

The acute irritation of Eczema will almost invariably yield to UNGUENTUM ECZEMA (WILLOWS), which also exercises a most beneficial effect on the disease itself. It contains no mercury, and can be used freely on children or adults.

**WILLOWS, FRANCIS, BUTLER & THOMPSON, Limited,**

*Wholesale Druggists,*

Telegrams—
"FORTY, LONDON."

40, ALDERSGATE STREET, LONDON.

Telephone—
171 LONDON WALL
12530 CENTRAL.

## "I have a very high opinion of SCOTT'S Emulsion"
## "As a powerful tonic"
## "And rejuvenating agent."

——— ———, *London, N.W., November 1st, 1906.*

EVIDENCE

*"Dear Sirs,—My elder girl, aged 13 years, takes SCOTT'S EMULSION very well, and was, as is always the case when taking it, much benefited by it. I need not say that I have a very high opinion of the value of SCOTT'S EMULSION as a powerful tonic and rejuvenating agent."*

*Believe me, Yours faithfully,*

——— ———, *M.D., M.B., B.S., M.R.C.S., L.R.C.P., Mem. Brit. Med. Assoc., Late Surg. Invalid Asyl. ——— Casualty Ho. Surg. ——— Hosp. & Asst. Phys. ——— Skin Hosp.*

16 oz. Bottle with formula, free to any physician, surgeon, or certificated nurse desiring to test SCOTT'S EMULSION. SCOTT & BOWNE, Ltd., 10 and 11, Stonecutter Street, Ludgate Circus, London, E.C.

## THE NATURAL MINERAL WATERS OF
# VICHY
## (STATE SPRINGS)

**CÉLESTINS** For Diseases of the Kidneys, Gravel, Gout, Rheumatism, Diabetes, &c.

**GRANDE-GRILLE** For Diseases of the Liver and Biliary Organs, &c.

**HÔPITAL** For Stomach Complaints, Indigestion, &c.

**VICHY-ÉTAT PASTILLES** Two or three Pastilles after each meal facilitate digestion

**VICHY-ÉTAT COMPRIMÉS** For instantaneously producing an effervescing alkaline water.

**CAUTION.**—Each bottle from the STATE SPRINGS bears a neck label with the word "VICHY-ÉTAT" and the name of the SOLE AGENTS:—

**INGRAM & ROYLE, Ltd., 26, Upper Thames St., E.C.** And at LIVERPOOL & BRISTOL.

*SAMPLES AND PAMPHLETS FREE TO MEMBERS OF THE MEDICAL PROFESSION ON APPLICATION.*

46

# The Bradshaw Lecture

ON

# THE BRAIN STRUCTURES CONCERNED IN VISION.

*Delivered before the Royal College of Surgeons of England on Dec. 11th, 1909,*

BY FRANCIS RICHARDSON CROSS,
M.B. LOND., F.R.C.S. ENG.,
CONSULTING OPHTHALMIC SURGEON TO THE BRISTOL ROYAL INFIRMARY AND SURGEON TO THE BRISTOL EYE HOSPITAL.

## COMPARATIVE ANATOMY.

MR. PRESIDENT AND GENTLEMEN,—In the lower vertebrata a simple brain is formed by enlargement of the anterior end of the spinal cord and by the widening and division of its central canal to form ventricles. Upon this primitive brain swellings are developed in connexion with the sense of sight and smell. The sense of smell seems first of early importance probably for selection between nutritious or poisonous foods or a means of safety. In fishes we find the visual organs well developed and varying in importance with the necessity in the species for more or less perfect sight: optic lobes and tracts, an optic chiasma and infundibulum, a third, fourth, and lateral ventricles and corpora geniculata underneath the optic thalamus. These often vary conversely in importance with the olfactory region, which is enlarged when smell is the more needed function. In all fish the optic nerves cross quite separately one above the other, from one eye to the opposite optic lobe, or one nerve may pass through a slit in the opposite one.

In amphibians the brain is usually of low type but rather large. In the proteus, which is practically blind, the optic lobes are scarcely recognisable, but in the frog they are large and form the broadest part of the brain. In the reptilia the brain is long and narrow, but it has become much increased in size and is well differentiated, and we get a very definite cerebral cortex. The three mantles of the brain exist as found in mammals: (1) the basal pallium or pyriform; (2) the marginal pallium or hippocampal; and (3) the neopallium or higher cortex (brain proper).

The brain in birds is broad and highly developed, enlarged chiefly by the size of the corpora striata. All the structures upon which sight depends are very well developed. The thalamus and optic lobes are highly organised, and there are even present small temporal and occipital lobes. In birds the optic chiasma is single and complete and crosses over the infundibulum. The bundles of fibres from each optic nerve interlace and alternate, but those of each nerve completely decussate to the opposite side. The optic tracts pass round the optic thalami and show well-developed geniculate bodies. In birds of prey, where rapid coördination between the seeing and capturing of their prey is essential, the optic lobes are very strongly developed. Vision is, as a rule, panoramic, one eye for each side. (The fowl sees its food one eye at a time.) The owls and hawks, whose eyes look forward and who undoubtedly possess a considerable field of binocular vision to enable them to catch their living prey; probably no fibres from the optic nerve pass direct without decussation. Their vision is binocular, but not stereoscopic, for which direct as well as decussating fibres are required.

In the marsupials the brain becomes still more highly organised. On the mesial surface of the hemispheres there appears a sulcus which runs horizontally behind and parallel with the hippocampal. This is the calcarine, or splenial, about which the cortical substratum for vision is placed; it is one of the earliest, best defined, and most constant fissures of the brain, and it can already be shown to form the calcar avis in the ventricle. A genual and a rostral sulcus also show on the mesial surface of the hemisphere, although no corpus callosum as yet exists.

When we reach the placental mammals a corpus callosum becomes developed and completes the three great commissures with the anterior and the hippocampal. In the colugo (insectivora) the sulci on the brain become more marked; the most definite is a deep calcarine sulcus running horizontally forward, almost the whole length of the mesial surface of the hemisphere; there are also very large anterior quadrigeminal bodies. In the many families of rodents there is a peculiar absence of sulci, especially on the mesial aspect of the brain, and the calcarine fissure is rarely seen. The squirrel requires very accurate sight, and he has large optic nerves and very developed anterior quadrigeminal bodies. The rabbit and the hare probably possess a very acute sense of hearing. They live to avoid being captured. The eyes are placed so much on the side of the head that each carries an enormous range over its field of vision, and they can see laterally and behind almost as well as in front. This wide panoramic vision cannot well be associated with any great binocular effort; nearly all the optic nerve fibres decussate.

In the carnivora the brain proper is highly developed; it passes forward over the olfactory bulb and backward over the cerebellum. There is a very high degree of binocular vision. In the fruit-eating carnivora the eyes are at the side of the head and they possess only a limited convergence. But in the felidæ and others the eyes are set forward and the pupil is very active. These animals require good distant vision, often when the light is dull, and they also need very reliable closer sight and a most perfect coördination of the eyes with the fore limb, by which they catch their prey. In the optic chiasma there are considerable direct as well as decussating fibres. There is a deep calcarine sulcus which with the intercalary shuts off a posterior lobe from the rest of the brain. In some species there appear secondary fissures, running out of the calcarine or even a definite retrocalcarine.

The ungulata are large animals and they need a large brain, but the mesial area is very simple. There is no high specialisation in the calcarine fissure; it is large and placed behind the splenium. It joins the intercalary and this the genual, showing a complex splenial or a form of cingular arc. The eyes are usually placed on the side of the head and separated by the forehead or nose. There is a wide area of periscopic sight, but they only have a limited amount of convergence and binocular vision. In the horse about one-sixth of the fibres decussate.

In periscopic vision each eye is responsible for the field on its own side, and as this is represented on the opposite side of the brain all the optic nerve fibres must decussate. When the eyes tend to converge and give slight binocular vision a part of the nasal side of each field is overlapped. The superimposed parts have crossed to the opposite side of the middle line. The extreme nasal side of the right field is now concerned with the left field of vision, and the fibres that represent this must go to the opposite side of the brain. As the eyes turn more forward more and more of the nasal fields overlap, and more and more direct fibres are required. In perfect stereoscopic vision both visual axes must be turned towards the object looked at. The whole nasal field is carried across the middle line; we thus have an almost complete overlapping of the two fields, and, what is more important, overlapping of the objects seen by the two maculæ.

In the monkeys the calcarine sulcus becomes the centre of further developments. In the aye-aye and lemurs it is somewhat vertical, but in the tamarin, one of the anthropoid apes, and marmoset, a long single sulcus is prolonged horizontally far back into an elongated occipital lobe, which measures nearly half of the brain. In the squirrel monkey (cebidae) almost half the hemisphere lies behind the splenium. In this large occipital lobe the calcarine sulcus terminates in a wide-shaped bifurcation, and several other compensatory calcarine sulci are developed. The collateral runs forward on its ventral side and from its dorsal runs up a parieto-occipital sulcus close behind the intraparietal. In the macacus we have the higher organisation of the old-world monkeys: the smell organs are well seen but diminishing. The long bifid retrocalcarine, the callosal and the parieto-occipital with the intraparietal sulci are well developed, and the general conformation of the brain, especially in the occipital lobe, closely resembles that seen in man.

## THE VISUAL PATH IN MAN.

The optic chiasma has very important relations with the third ventricle and with the structures adjoining it; and lesions involving this ventricle would be likely to cause visual symptoms. The lamina cinerea, the very vascular "anterior perforated space" and the tuber cinereum, are

important relations of the optic chiasma, and bitemporal defects of the visual fields might be expected to arise from many directions. In some cases of primary optic atrophy I have seen a narrowing of the nasal fields which I have taken to be due to some error in the anterior perforated space. Acromegaly seems undoubtedly to depend on a diseased condition of the pituitary body, and the close relationship of the latter with the chiasma accounts for the early onset of bitemporal hemianopsia. Bitemporal hemianopsia from implications of the chiasma may, however, be very marked without any symptoms of acromegaly, and therefore presumably without implications of the pituitary body. The fibres in the chiasma are decussating, direct, and intercerebral.

About 80 per cent. of the retinal fibres pass through the lateral geniculate body, the other 20 per cent. go to the nucleus of the pulvinar of the optic thalamus. The geniculate fibres are directly associated with vision. Those that pass through the pulvinar (which is closely allied in structure and probably in function to the geniculate body) do not go with the others to the calcarine area. They have no doubt some special function connected with sight, but they pass independently to other centres; some of them probably go to the neighbourhood of the angular gyrus. Degeneration of the pulvinar, if the geniculate bodies are intact, does not produce hemianopsia. The upper half of the external geniculate body seems to correspond with the upper quadrant of the retina.

The axis processes from the optic tracts and lateral geniculate bodies traverse the posterior end of the internal capsule at the junction of its superior and inferior laminæ behind the lenticular body, and then pass directly backward as the optic radiations towards the occipital lobe. They run along the outer wall, roof, and floor of the posterior horn of the lateral ventricle, and end in the nervous felt-work of the occipital cortex along the calcarine fissure. The occipito-thalamic radiations consist chiefly of "corticipetal fibres" for sight, but "corticifugal fibres" also pass along them to the superior brachium and quadrigeminal colliculus, and thence to the oculo-motor nerves. By Campbell these corticifugal fibres are thought to be the axones of Meynert giant cells in the occipital cortex.

If the visual region of the occipital cortex is removed on one side the lateral geniculate body of the same side undergoes atrophy, particularly in the cells. The pulvinar does not seem much altered. If the eyes are extirpated the tract undergoes atrophy in the grey matter between the cells, but the cells themselves are not affected. Lesions of the retina cause degeneration in the intercellular grey matter of the geniculate body, which is mainly composed of ramifications of the retinal fibres. The visual path has its anterior neurons running from the retinal elements to arborise in the cells of the external geniculate bodies, and from them the posterior neurons run on to nerve cells in the occipital cortex in and around the calcarine fissure. It is therefore not the retinal fibres, but the fibres of the external geniculate body that are projected upon the occipital lobe.

## THE VISUAL CORTEX.

The calcarine fissure, which in man commences a short distance behind and below the splenium, was first well described by Cunningham. It consists of an anterior part or "stem," the "true calcarine fissure," which protrudes into the posterior horn of the lateral ventricle as the "calcar avis." The fissure as it passes backwards appears to bifurcate into the posterior or "retrocalcarine" and the occipito-parietal fissures; really, however, the latter is separated by the annectant cuneal gyrus, and the former by the deep anterior annectant cuneo-lingual gyrus. The posterior calcarine itself also seems to bifurcate behind into an upper and lower vertical fissure, the "fissura extrema" or "terminalis," but it is really separated from them by the posterior annectant cuneo-lingual gyrus.

If sections are made through the cortex of the occipital lobe there is seen running across the calcarine fissures, and parallel to the grey matter which covers the surface of the lobe, a well-marked easily seen white line. The line is due to the presence of a special plexus of nerve fibre running in the cortex and traceable for a considerable distance within its deeper surface. This is known as the line of Gennari. Elliot Smith has most carefully described its distributions: it stops abruptly and can be readily traced, and the area over which it passes can be easily identified. It runs in the grey substance of the occipital lobe, following the sulci and convolutions, and by means of its presence the area concerned in vision can be accurately mapped out. Though it appears as a line in sections of the brain, it is really, of course, a layer of special tissue, which forms part of the thickness of the cerebral grey matter, and lies half-way between the surface and the underlying white matter of the brain.

At the retrocalcarine fissure it is seen to line the hollow and both sides of the sulcus, and it reaches upward on the cuneal gyrus and downward on the lingual gyrus, as far as the two small sulci, which run nearly parallel to the retro-calcarine—namely, the "sulcus limitans superior" above, and the "sulcus limitans inferior" below; these meet together in the pole of the occipital lobe, and bound the area striata at that part. It is only prolonged a little to the posterior lateral surface of the hemisphere around the tip of the occipital lobe. Here it is strictly bounded by the sulcus lunatus, which is itself free of the striate tissue. The area of cortex which it involves is called by Elliot Smith the "area striata." This is the "visuo-sensory area" of Bolton, Campbell, and others, the "primordial visual area" of Flesching.

The structures concerned have been most carefully examined by Campbell, who finds that the special lamination included in the line of Gennari shows its largest dimensions at the forked termination of the posterior calcarine fissure which it surrounds, just reaching the pole of the occipital lobe, and as the length of one or other limb of the fork may be greater or less the extent of the striate tissue will also increase or diminish, not only in length but in breadth and substance. It spreads forward, bounding the retrocalcarine above and below, involving the cuneo-lingual gyri at either end of that fissure. It spreads definitely below, occupying the lingual gyrus, and it passes forward half-way along the lower border of the true calcarine fissure. Above it is well marked at the back of the cuneus, but anteriorly at the angle where the occipito-parietal sulcus leaves the calcarine it has gradually ceased to exist, and it is not found in the cuneal portion of the annectant gyrus at that part. The occipito-parietal sulcus is quite free of it, so is the gyrus fornicatus. There is no striate tissue along the upper margin of the calcarine proper. Both Campbell and Elliot Smith insist that it is only found along the lower margin. On the other hand, the retrocalcarine is extensively and completely surrounded by the stria Gennari both in man and the anthropoid apes. Elliot Smith proposes to call it the "medial intrastriate sulcus."

On microscopic examination special arrangement is found in the *visuo-sensory area*. The line of Gennari is seen to be composed of a dense network of fibres of fine calibre mingled with some larger fibres, which run horizontally and obliquely. There is marked consolidation in the line of Gennari, below it a pale-stained area with the termination of the optic fibres. The external layers of large pyramids are replaced by a layer of curious large triangular or quadrilateral-shaped stellate cells, practically distinctive of this region, and found chiefly along the calcarine fissure; they have strong processes of considerable length which pass horizontally, some of them run obliquely in the fibre plexus. In the deeper parts of the cortex the internal layer of large pyramids is modified by the presence of a layer of pyramidal cells, the solitary cells of Meynert, another important distinctive feature of the calcarine cortex.

Outside the visuo-sensory area is a border about 2 centimetres in width, the *visuo-psychic area*. It covers the cuneus above, but not the occipito-parietal fissure nor the upper edge of the true calcarine, but it occupies its lower border almost in its whole length. It passes over the back part of the collateral fissure and round the occipital lobe rejoining the cuneus above. The gyrus fornicatus does not seem to be a part of the substratum of vision.

The visuo-psychic region shows peculiarities in the histological structure; fine fibres are numerous, but they are not collected together as in the line of Gennari, nor is there the pallid zone underlying it. The external layer of large pyramids reappears and none of the peculiar stellate cells remain, but, on the other hand, some of the pyramids are much enlarged into giant cells, with several roots below and one very long-drawn-out process above. These cells are the most characteristic elements of the layer. The large cells

of Meynert are not found. The very great number both of cells and of fine fibres in this area suggests a high degree of functional activity, and through it are probably transferred the impulses, received from the parts around the calcarine, to further districts in the brain where the higher attributes of sight are located.

Dr. F. W. Mott, in his interesting Bowman lecture on the Progressive Development of the Visual Cortex, shows how the width and complication in structure of the cortex gradually increase as we ascend the animal series and how the special cells become more necessary. Thus in the hedgehog, in addition to polymorph and small stellate cells, are found occasional large pyramids. In the rabbit there is a line of Gennari, large stellate cells, and branching pyramids. Ungulates have a well-marked line of Gennari and numerous solitary cells of Meynert. In the cat there are numerous cells of Meynert, but the most striking feature is the depth of the pyramidal layer. These pyramids are also well developed in the cervical region of the cord, and Mott suggests they lie along the volitional path of the executive faculty which is exercised through the fore limb and with the help of binocular vision. The depth of the pyramidal layer increases after birth. Dr. Mott considers that the progressive development of the pyramidal layer in the visual cortex of mammals is associated with an increase in the perfection of binocular vision.

Flesching has shown by preparations of the fœtal brain how the development of different parts of the visual areas takes place. He considers that as there are many degrees of functions so the nerve fibres develop as they are required: the sensory found at birth, the motor found soon after birth, and the associated which gradually develop. Thus at birth only a portion of the fibres in the optic-thalamic radiations have acquired their myelin investment. All those that have done so come from the lateral geniculate bodies and they go direct to the calcarine fissure. Those fibres that come from the pulvinar appear to be medullated later in life and to pass outside the immediate limits of the calcarine area. Medullation of the fibres in the cortical areas occurs at different times. Thus an infant very soon sees light, but does not show that it sees an object held in front of it for some weeks, while it takes him as many months to turn his eyes to follow an object held at his side or to stretch out his hand to get it. It is obvious that the highly coördinated work that depends on sight is constantly needing the development of new cells and of association fibres throughout life, and they are far more easily acquired in early life.

The visuo-sensory area along the calcarine fissure is the primary station in each hemisphere for the reception of impressions coming from the retina through the geniculate bodies; around it is the visuo-psychic area to which these impressions are transferred; it occupies the rest of the surface of the occipital lobe, its functions being to elaborate and to interpret. If part of the visuo-psychic area is primarily diseased, there is likely to be a partial hemianopsia complicated by slight peculiarities of vision more or less indefinite, some difficulty in memory of words, some form of letter, word, or mind blindness. When the fibres that go to the temporal region are affected, there may be word deafness, or loss of power in the musical faculty, to recall names, or to read aloud. The psychic cells are associated with the psychoic-motor, where the impressions or information gained by sight are transferred for purposes of thought, speech, or action, and these with the emissive motor by which speech and writing are affected. The centres for these latter acts lie adjoining those for the simple movement of the lips and hand.

The various parts of the visual cortex are connected by short association fibres almost infinite in their distributions. Adjoining the occipital lobe and continuous with its lateral portion is the angular gyrus which appears to be a higher visual centre of some importance, probably developed mainly on the left hemisphere. The angular gyrus might be readily associated with the primary visual areas by means of fibres running through the occipital lobe, or with the pulvinar or elsewhere by association fibres.

The central sulcus of each hemisphere separates the motor area (frontal) in front from the sensory area (parietal) behind. The intraparietal sulcus runs upward almost parallel behind the central (inferior and superior post-central); it then turns horizontally backwards parallel to the upper margin of the hemisphere and terminates in the occipital lobe behind. It separates the post-central region of common sensation, and the superior parieto-occipital gyri from the supra-marginal and angular gyri; these two latter are probably the centre for the recognition of higher, more elaborate forms of sensation and of sight and hearing.

In cases of visual hallucination the angular gyrus is perhaps usually, but not always, affected. The supra-marginal may be the seat of mischief or the posterior parietal lobule. A case of scar after injury over the region of the angular gyrus on the right side was associated with epileptiform attacks on the left side, preceded with bright red flashes of light and succeeded by visual hallucinations. Mr. Gould trephined with cure. In a case of MacEwen injury to the side of the head had produced melancholy and homicidal impulses; there was no damage to the outer part of the skull, excepting a slight depression behind the angular process of the frontal, which could not account for the symptoms; no motor phenomena were present. It was discovered that directly after the accident and for some time since the patient had suffered from psychical blindness. The skull was trephined over the angular gyrus, and a portion of the lateral table was found pressing upon the posterior portion of the supra-marginal convolution, a corner of it embedded in the brain. This was removed with relief to his mental condition.

Distant regions are connected with visual areas by long association fibres, some of which are arranged in well-defined bundles. *The perpendicular fasciculus* connects the superior occipital and parietal gyri above with the inferior occipital and fusiform below, and with the temporal. *The superior longitudinal fasciculus* joins the frontal lobe with the occipital, and, Mott believes, through the large pyramidal cells of the visuo-psychic area. *The inferior longitudinal* runs along the outer wall of the posterior and inferior horns of the lateral ventricle, and probably connects sight with hearing, though the fibres may be for projection rather than for association, and connecting the occipital cortex with the optic thalamus. Many fibres connect the neighbourhood of the calcarine with the angular or marginal gyri, and interference with these fibres might produce typical abnormalities in sight. *The fasciculus occipito-frontalis* runs below the corpus callosum external to the lateral ventricle, and connects the convex surface of the occipital lobe with many parts of the frontal. The splenium is the commissure of the occipital lobes, and connects one visual area with the opposite occipital cortex. *The occipito-thalamic radiation* contains two sets of fibres. The centripetal run towards the occipital cortex to produce vision, and impulses are transferred by the centrifugal from the cortex to the lower parts of the brain to assist the sight by causing movements of the eyes.

### VISUAL REFLEXES.

The pupil reflex passes through the lower centres, corpora quadrigemina, and third nerve; it is quite unconscious and does not reach the cortex of the brain. But pupil movements are also controlled by impulses centrifugal from the visual cortex through the brachium superius and the quadrigemina.

Many of the simpler and most constant movements that occur in association with sight are automatic, practically reflex, such as involuntary movements starting from the occipital lobes, as in blinking of the eyes on looking towards a sudden light, or to moving objects. Wide movements of the head and limbs are constantly necessary, such as avoidance of obstacles, and become visual reflexes of varying complexity. For them associated fibres run from the visual cortex to the motor centres from which the movements emanate; some of these tracts are in such constant coöperation that the associated movements become a kind of compound reflex action gradually evolved by constant use. Eye movements intimately associated with the most complex mental activities are most of them involuntary and unconscious; consciousness is alone concerned with the result affected.

The visual centres are undoubtedly reached by other afferent impulses than through the eyeball and retina alone. Pupil action and accommodation, and muscle sense produced by movements of the eyes in any direction or in convergence, cause simple impulses towards the brain. Visual judgments also largely depend on impressions from the sense of touch, and as almost every movement of the body is guided by sight the associations around sight are very wide indeed.

When the sight is lost from defects in the *eyeball or optic nerve* almost all other impulses, from hearing, touch, muscle